Service Manual

ORDER NO.
ARP3010

MULTI PROJECTION UNIT
RM-V2550E
PROJECTION SCREEN KIT
RM-V2550S

● **Refer to the service manual ARP3001 for RM-V2550U.**

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	RM-V2550E	RM-V2550S		
WYVZP	◯	—	AC220 -240V	
WL	—	◯	———	

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O – SZG AUG. 1998 Printed in Japan

1.CONTRAST OF MISCELLANEOUS PARTS

NOTES: ●*Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
●*The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
●*When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
560 Ω → 56×10^1 → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47×10^3 → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62k Ω → 562×10^1 → 5621 ..... RN1/4PC 5 6 2 1 F
●*Parts marked by ☆ are important parts which relate in X-rays radiation. If any of these parts need to be replaced, always replace with specified parts.*
●*Parts marked by × are important parts which relate in X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by × is replaced, there is danger of being exposed to X-rays.*

CONTRAST OF RM-V2550E/WYVZP AND RM-V2550E/LU/CA

RM-V2550E/WYVZP and RM-V2550U/LU/CA are constructed the same except for the following:

Ref.No.	Mark	Symbol and Description	Part No.		Remarks
			RM-V2550U/ LU/CA	RM-V2550E/ WYVZP	
		PACKING (MAIN BLOCK)			
P5-1		UPPER CARTON	AHD2957	AHD2987	
P5-18		OPERATING INSTRUCTIONS(English / French)	ARD1021	Not used	
P5-18		OPERATING INSTRUCTIONS (English/ French/ German/ Italian/ Spanish)	Not used	ARE1338	
P5-20	⚠	POWER CORD	ADG1167	Not used	
		EXTERIOR BLOCK (1)			
P7-1		BACK COVER R	AMM2930	AMM2942 *1	*1: BACK COVER R ASSY
P7-2		BACK COVER (UPPER)	AMM2925 *2	AMM2925	*2:AMM2890 → AMM2925
P7-3		BACK COVER (UNDER)	AMM2891	AMM2944 *3	*3: BACK COVER UNDER ASSY
P7-4		BACK COVER L	AMM2888	AMM2943 *4	*4: BACK COVER L ASSY
P7-5	NSP	REAR PANEL SHEET	AAK2713	AAK2722	
P7-11	NSP	SCREEN FRAME 50 ASSY	AWL1426	Not used *5	*5: Refer to RM-V2550S
P7-13	NSP	SHIELD PANEL	ANK1564	ANK1573	
	NSP	HOLDER	Not used	ANK1569	
	NSP	COVER	Not used	BNK1046	
		EXTERIOR BLOCK (2)			
P8-8		MIRROR COVER (UPPER)	AMM2881	AMM2922	
		H.V/ DEFRECTION AND POWER SUPPLY BLOCK			
P11-1	☆ ⚠	POWER SUPPLY ASSY	BWV1044	BWV1045	
P11-3	⚠	FUSE (FU5001,125mA / 125V)	AEK1010	Not used	
P11-3	⚠	FUSE (FU5001, T250mA / 250V)	Not used	AEK-503	
P11-4	⚠	FUSE (FU5000, 6.3A / 125V)	AEK-309	Not used	
P11-4	⚠	FUSE (FU5000, T6.3A / 250V)	Not used	AEK1039	
P11-9	⚠	FUSE (FU6001, 4A / 125V)	AEK1018	Not used	
P11-9	⚠	FUSE (FU6001, T4A / 250V)	Not used	AEK-514	
P11-10	⚠	FUSE (FU6003, 500mA / 125V)	AEK1010	Not used	
P11-10	⚠	FUSE (FU6003, T500mA / 250V)	Not used	AEK-505	
P11-11	⚠	FUSE (FU6002, 4A / 125V)	AEK1018	Not used	
P11-11	⚠	FUSE (FU6002, T4A / 250V)	Not used	AEK-514	

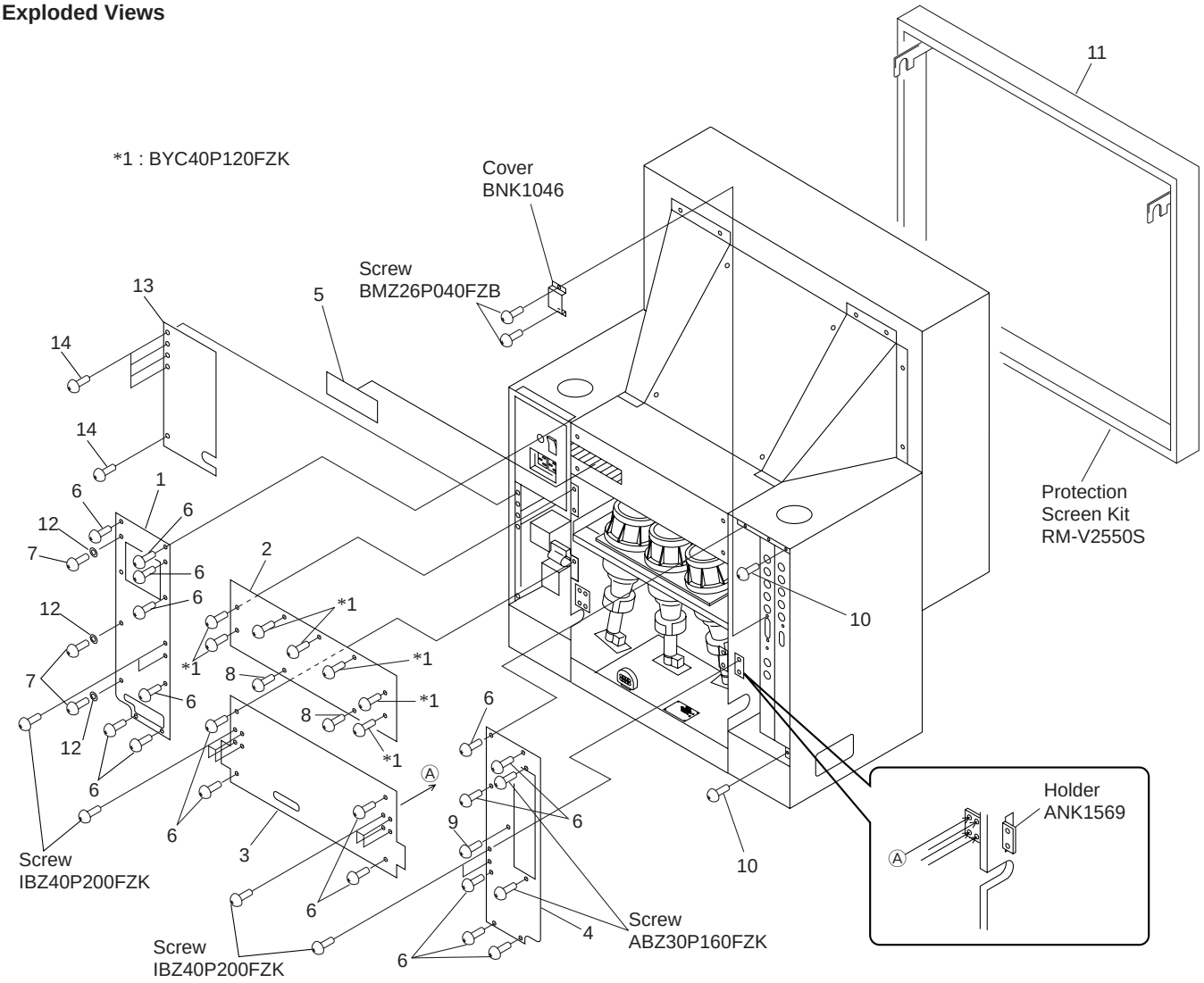
Ref.No.	Mark	Symbol and Description	Part No.		Remarks
			RM-V2550U/ LU/CA	RM-V2550E/ WYVZP	
P11-13		FUSE INDICATED CARD	BAX1064	Not used	
P11-17		POWER REAR PANEL B	ANC2308	ANC2320 *	* POWER PANEL C
P11-18		POWER REAR PANEL A	ANC2316	ANC2319	
P11-23	⚠	FUSE (FU1,10A / 125V)	AEK1035	Not used	
P11-23	⚠	FUSE (FU1, T6.3A / 250V)	Not used	AEK1039	
P11-25	⚠	1P AC OUTLET	AKP1181	AKP1088	
P11-27	⚠	CAPACITOR (C1,C2, 1500pF / AC250V)	ACG7007	ACG1062	

■ RM-V2550S (For RM-V2550E Screen)

RM-V2550S (Projection screen kit) and AWL1426(Screen frame 50 Assy) have the same construction except for the following :

Ref No.	Mark	Symbol and Description	Part No.		Remarks
			AWL1426	RM-V2550S	
P6-6		UPPER CARTON	AHD2958	AHD2985	

Exploded Views



■ POWER SUPPLY ASSY

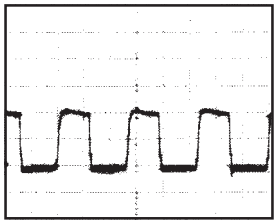
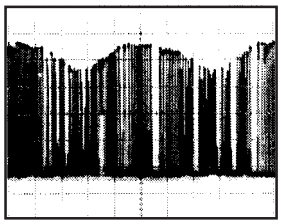
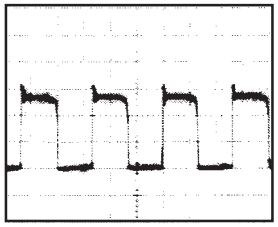
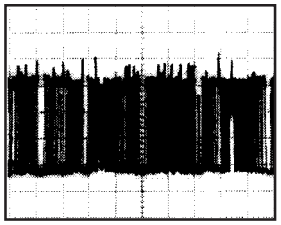
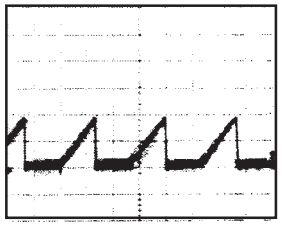
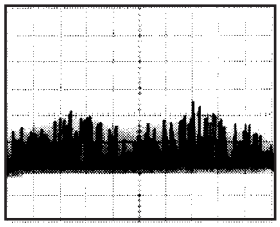
BWV1045 and BWV1044 have the same construction except for the following :

Mark	Symbol and Description	Part No.		Remarks
		BWV1044	BWV1045	
⚠	D5034, D5040	Not used	RG4C(A)	
	D5069	Not used	RU4A(A)	
⚠	C5032 (1.0uF/AC250V)	ACE1050	Not used	
	C5074	Not used	ACG-040	
	C5063 (3300uF/50V)	Not used	ACH1280	
	R5117 (5.6Ω / 1W)	ACN1033	Not used	
	R5117	Not used	RT5PZ4R7K	
	R511,R5112, R5116, R5118	Not used	RS3LMF222J	
⚠	L5006	Not used	BTK1003	
⚠	L5021	ATF1118	ATF1154	
⚠	L5022	ATF1154	ATF112	
⚠	L5023	ATF1158	Not used	
	L5024 - L5029	Not used	ATX1023	
⚠	T5000	ATT1145	ATT1249	

2. SCHEMATIC DIAGRAM

■ WAVEFORMS

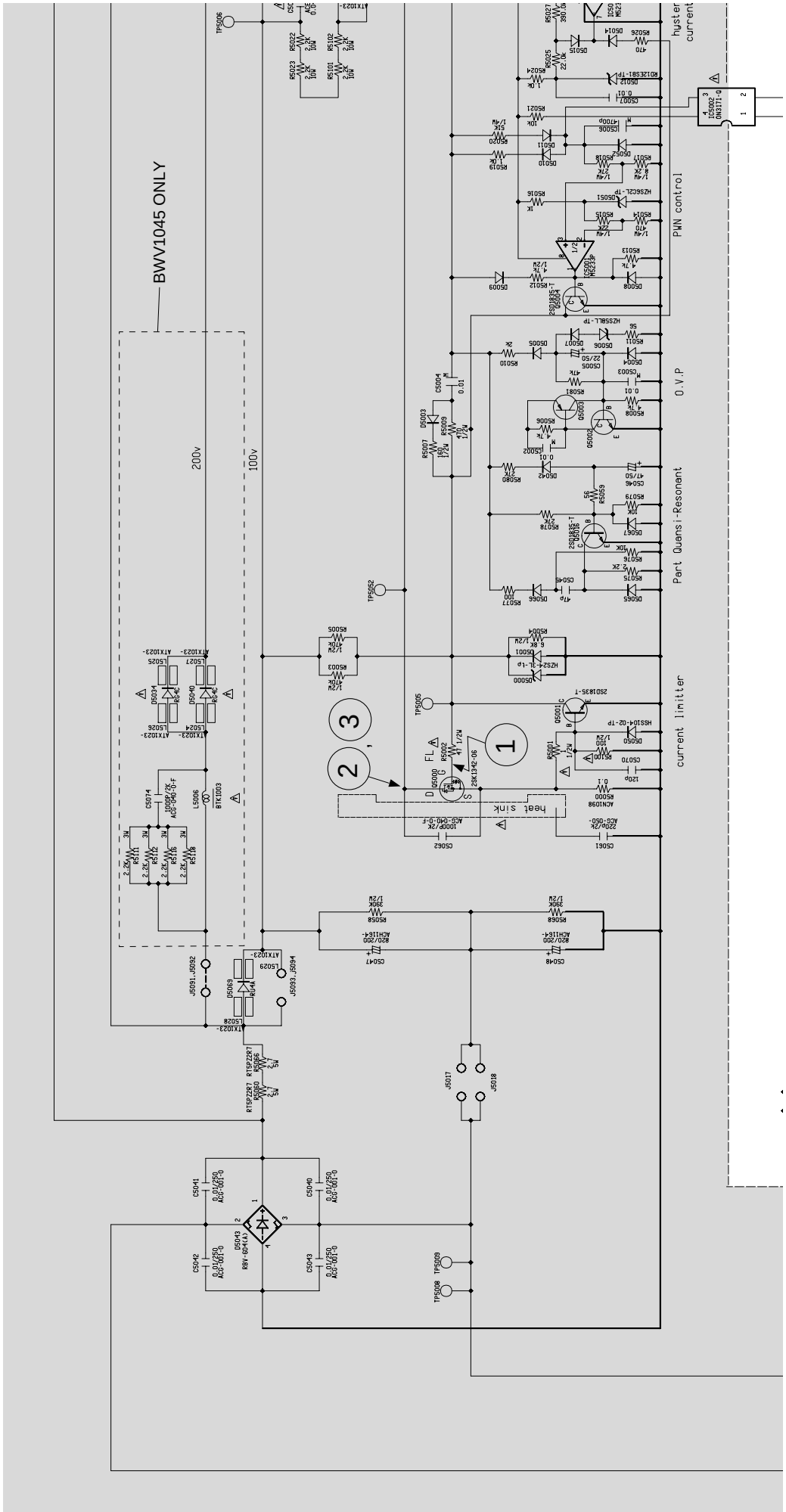
EF POWER SUPPLY ASSY

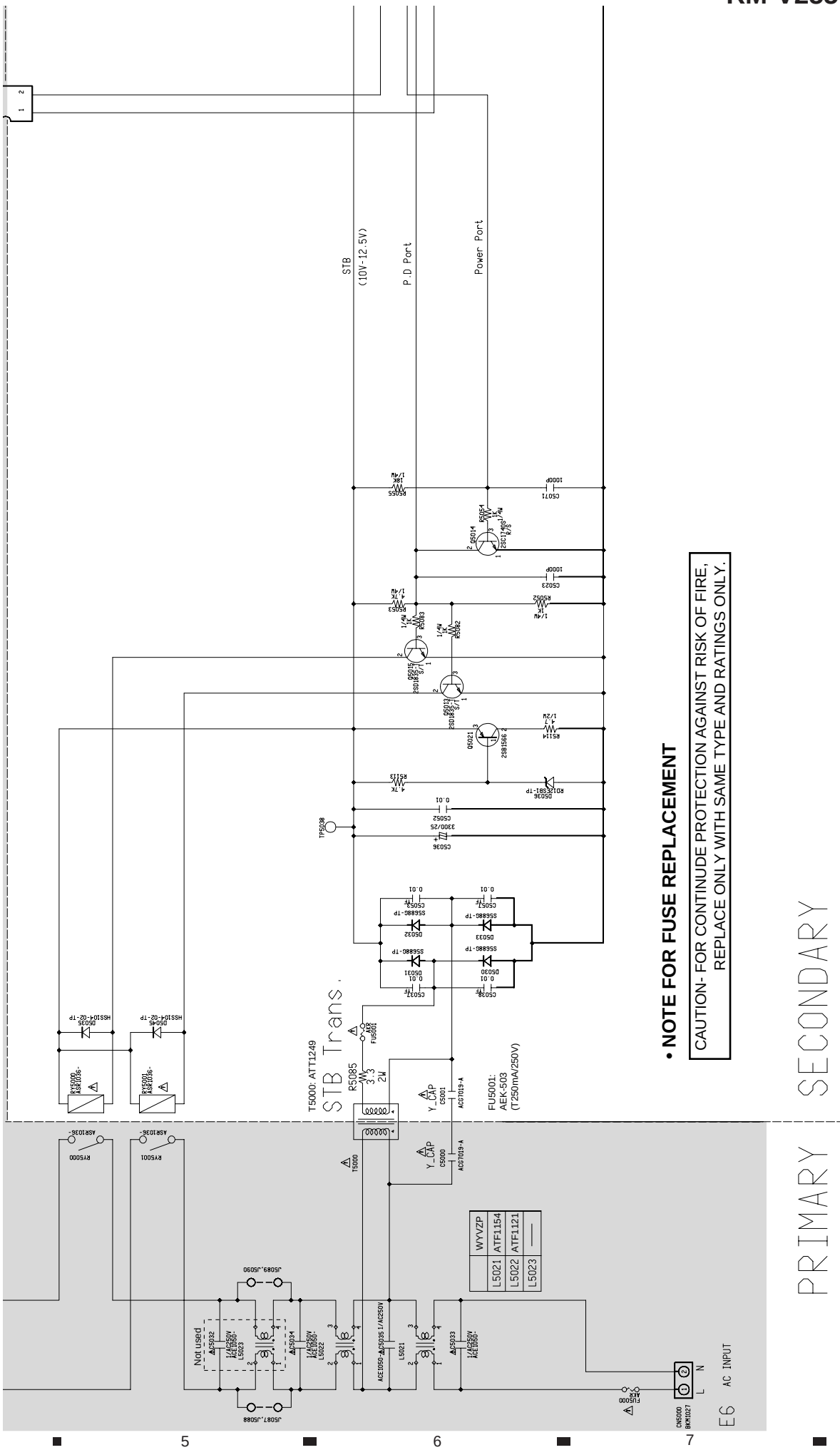
①-1 Q5000 Gate voltage (WYVZP) Vg: 10V/div, t : 10µsec/div 	①-2 Q5000 Gate voltage (WYVZP) Vg: 5V/div, t : 2msec/div 
②-1 Q5000 Drain voltage (WYVZP) Vd: 200V/div, t : 10µsec/div 	②-2 Q5000 Drain voltage (WYVZP) Vd: 200V/div, t : 2msec/div 
③-1 Q5000 Drain current (WYVZP) Id: 2A/div, t : 10µsec/div 	③-2 Q5000 Drain current (WYVZP) Id: 2A/div, t : 2msec/div 

2.1 POWER SUPPLY ASSY

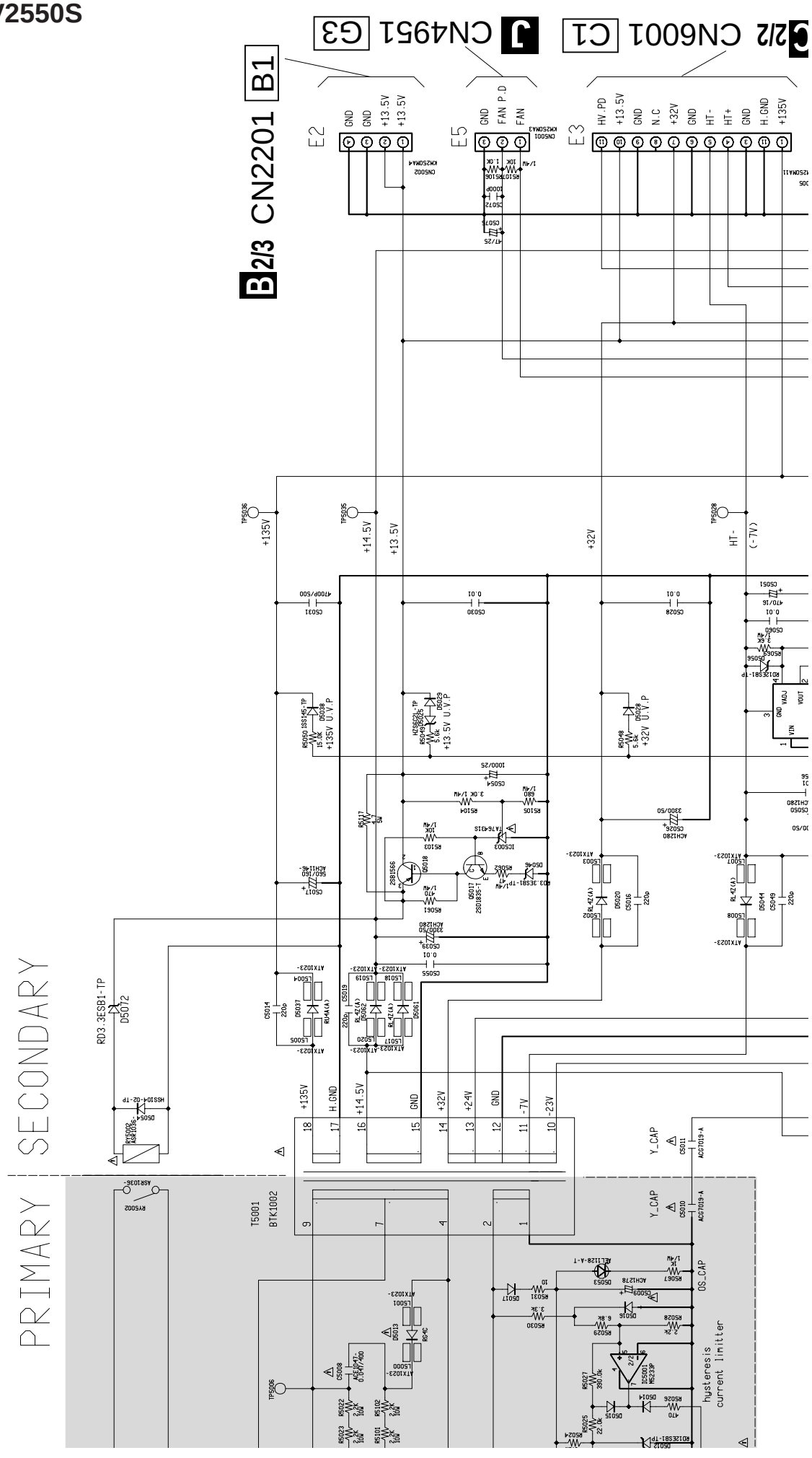
Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST"

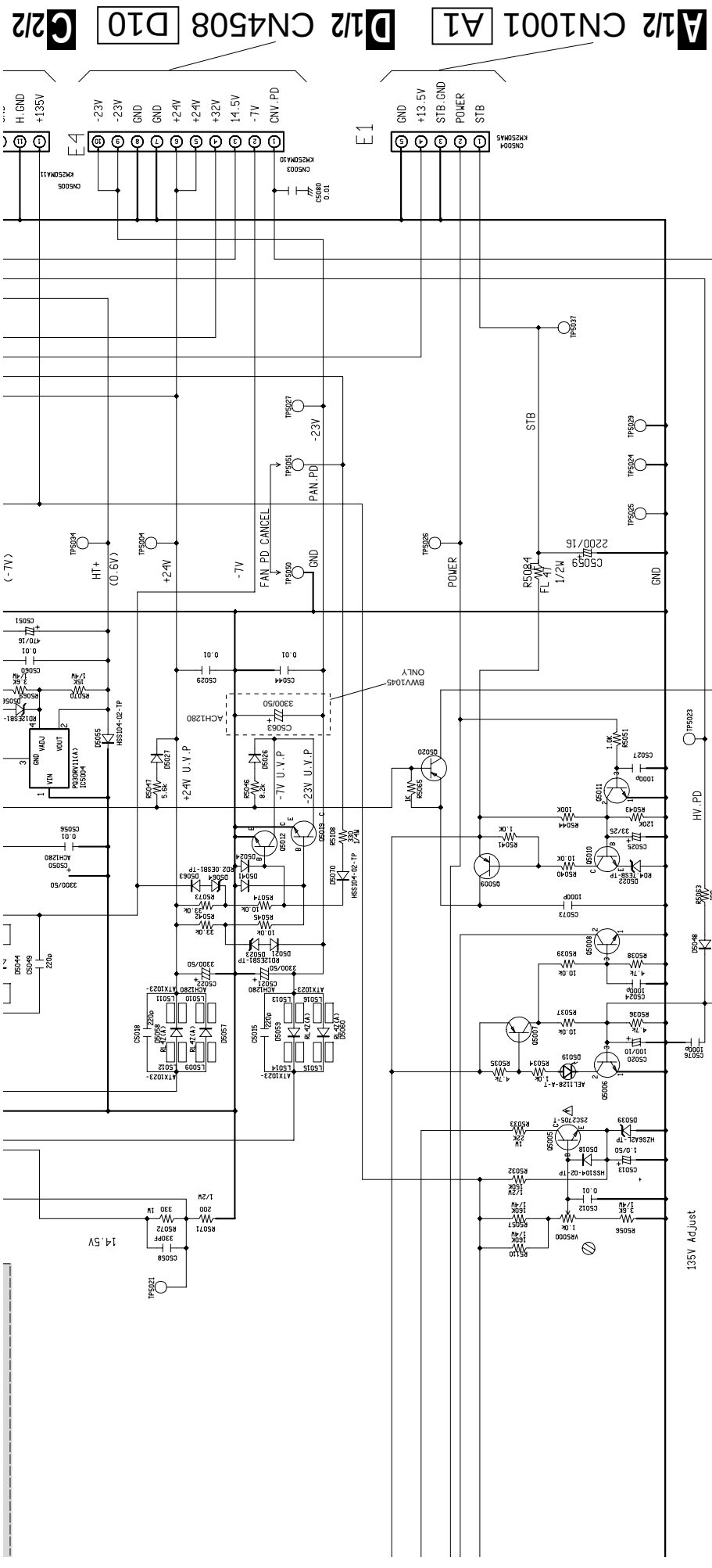
E-a E-b F POWER SUPPLY ASSY (BWV1045)




STB
(10V-12.5V)
P.D Port
Power Port
• NOTE FOR FUSE REPLACEMENT
CAUTION- FOR CONTINUDE PROTECTION AGAINST RISK OF FIRE,
REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.
T5000: ATT1249
STB Trans.
FU5001:
AEK-503
(T250mA/250V)
PRIMARY
SECONDARY
Not used
AC INPUT
WYVZP
L5021 ATF1154
L5022 ATF1121
L5023 —

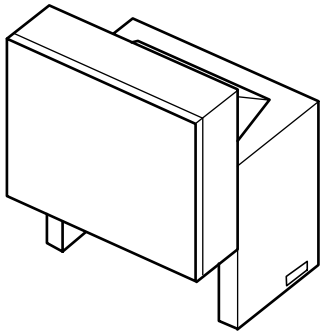
E-a E-b F


B2/3 CN2201 B1
C2/2 CN6001 C1
J CN4951 G3
E2
E5
E3
GND
GND
+13.5V
+13.5V
GND
FAN P.D
FAN
HV.PD
+13.5V
GND
N.C
+32V
GND
HT-
HT+
GND
H.GND
+135V
+135V
+14.5V
+13.5V
+32V
HT-
(-7V)
PRIMARY
SECONDARY
RD3.3ESB1-TP
D5072
T5001
BTK1002
+135V
H.GND
+14.5V
GND
+32V
+24V
GND
-7V
-23V
Y_CAP
OS_CAP
hysteresis
current limiter


A1/2 CN1001 A1
D1/2 CN4508 D10
C2/2
H.GND
+135V
-23V
-23V
GND
GND
+24V
+24V
+32V
14.5V
-7V
CNV.PD
GND
+13.5V
STB.GND
POWER
STB
STB
PAN.PD
FAN_PD_CANCEL
HT+
(0.6V)
+24V
-7V
GND
POWER
GND
2200/16
+24V U.V.P
-7V U.V.P
-23V U.V.P
HV.PD
CNV.PD
POWER P.D
135V Adjust
14.5V

Service Manual

PIONEER®
The Art of Entertainment



ORDER NO.
ARP3001

MULTI PROJECTION UNIT

RM-V2550U

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	RM-V2550U		
LU/CA	◯	AC100V — AC120V	————

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & safety code section 25249.6—Proposition 65

NOTES
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODELE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

1.1 SAFETY PRECAUTIONS

NOTICE: Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.
The following precautions should be observed:

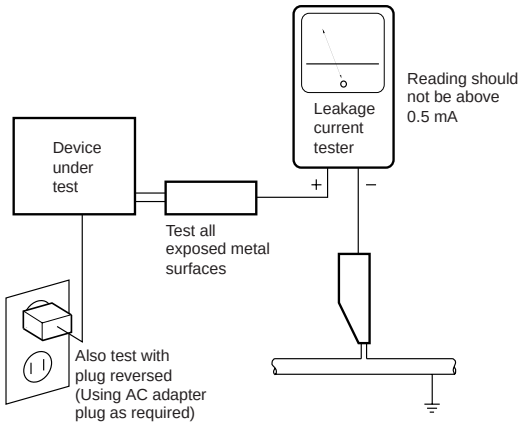
1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled.
   Keep picture tube away from the body while handling.
2. When service is required, even though the PROJECTION UNIT an isolation transformer should be inserted between power line and the set in safety before any service is performed.
3. When replacing a chassis in the set, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment covershields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress.
   Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's.
   Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced set to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the set by the manufacturer has become defective, or inadvertently defeated during servicing.
   Therefore, the following checks should be performed for the continued protection of the customer and service technician.

Leakage Current Cold Check

With the AC plug removed from l20V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester (DC 500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (input/ output terminals, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 0.3MW and a maximum resistor reading of 5MW. Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a 120V AC 60Hz outlet (do not use an isolation transformer for this check). Turn the AC power switch on.
Using a "Leakage Current Tester (Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet (input / output terminals, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.


Reading should not be above 0.5 mA
Leakage current tester
Device under test
+
–
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE SET TO THE CUSTOMER.

High Voltage

This set is provided with a X-ray protection for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this X-ray protection may correctly by operated.

Serviceman Warning

In the status of the black picture (video muting is being applied) when no signal is input, high voltage of this set during operation is less than 30.9kV. In case any component having some relation to the high voltage is replaced, confirm that the high voltage is lower than 30.9kV in the status of the black picture when no signal is input.
To measure H.V. use a high impedance H.V. meter. Connect (-) to earth and (+)to the FBT anode cable connector.
(Refer to page 90)

X-radiation

TUBE: The primary source of X-radiation in this set is the picture tube.
For continued X-radiation protection, the replacement tube must be the same type as the original, PIONEER approved type.
The picture tube (the CRT assy R, G, B) use in this set holds complete guarantee against X-ray radiation when the X-ray is sealed (See page 4). Accordingly, when the current in flowing to the picture tube be sure to perform it by putting the tube into X-ray sealed applied state. Avoid absolutely to flow the current to the picture tube itself. Moreover, when the voltage of the high voltage circuit becomes abnormally a little higher, the picture tube radiates X-rays. Accordingly, when servicing the high voltage circuit be sure to replace as an assembly with the POWER SUPPLY assy in the manner in which has been adjusted to perform normal operation.

1.2 PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in PIONEER set have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.
Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.
Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

1.3 CHARGED SECTION, HIGH VOLTAGE GENERATING POINT AND X-RAY PROTECTION

■ Charged section

The places where the commercial AC power is used without passing through the power supply transformer. If the places are touched, there is a risk of electric shock. In addition, the measuring equipment can be damaged if it is connected to the GND of the charged section and the GND of the non-charged section while connecting the set directly to the commercial AC power supply. Therefore, be sure to connect the set via an insulated transformer and supply the current.

1. AC power cord
2. AC inlet
3. AC power switch (S1)
4. AC outlet
5. Fuse
6. STB transformer and Converter transformer
7. Other primary side of the AC POWER assembly

For the places, refer to the EXPLODED VIEWS ,the SCHEMATIC DIAGRAM and the PCB CONNECTION DIAGRAM sections.

■ High voltage generating point

The places where voltage is 100V or more except for the charged places described above. If the places are touched, there is a risk of electric shock.

1. POWER SUPPLY assy (135V)
2. R. CRT DRIVE assy (10.5kV)
3. G. CRT DRIVE assy (10.5kV)
4. B. CRT DRIVE assy (10.5kV)
5. H.V assy & DEFLECTION assy (30.5kV,220V)
6. CRT assy R (30.5kV)
7. CRT assy G (30.5kV)
8. CRT assy B (30.5kV)
9. Focus variable resistor(VR1) (10.5kV)
10. Deflection yokes (L1, L2 and L3) Approx. (1100V at peak)
11. Yoke connection assy B Approx. (1100V at peak)

■X-ray protection

Regarding the parts which are relative to radiation of X-rays (There is the danger to radiate X-ray from the each CRT assy R, G, B), there are notifications of caution in the individual schematic diagrams. Be sure to read them for safety's sake.
The component parts for X-ray protection are as follows : When the current flows to the CRT assy , be sure to perform it with these parts being attached. Protection from the X-ray radiation is maintained in the state in which these parts have been installed to the CRT assy. Accordingly, never supply current only to the CRT assy.
Moreover, the anode voltage of the CRT assy should always be kept not higher than the predetermined value (in the minimum brightness and picture state when non signal input is higher than 30.5kV). Be sure to drive the CRT assy by using a completely functional POWER SUPPLY assy which have been adjusted completely in the combined state. (When the voltage abnormally becomes high, the X-ray protection circuit will operate.)

1.The each CRT assy (Never disassemble .)
2.The each Lens assy

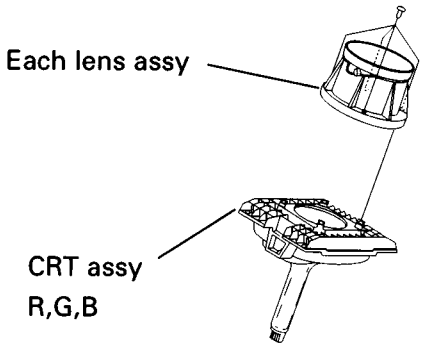


Fig. 3-2 Component parts for X-ray protection

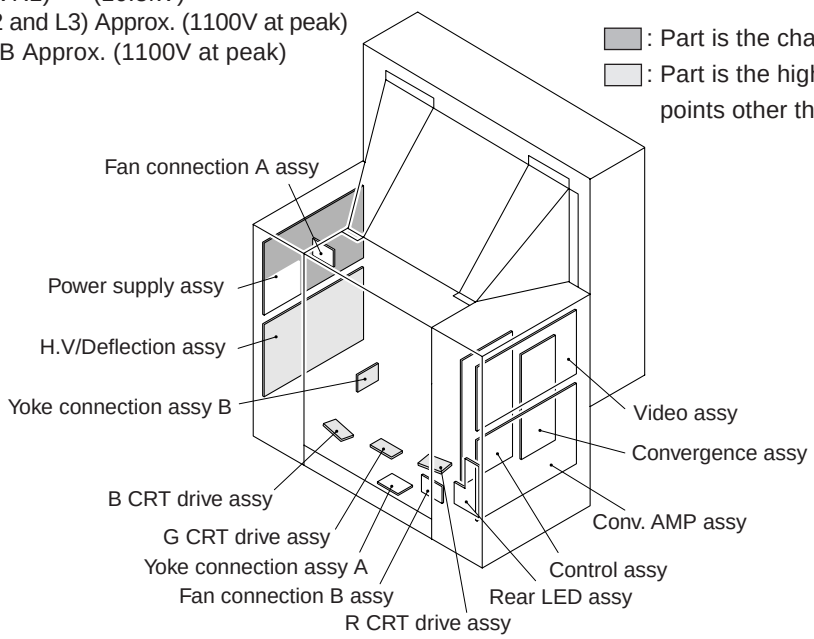
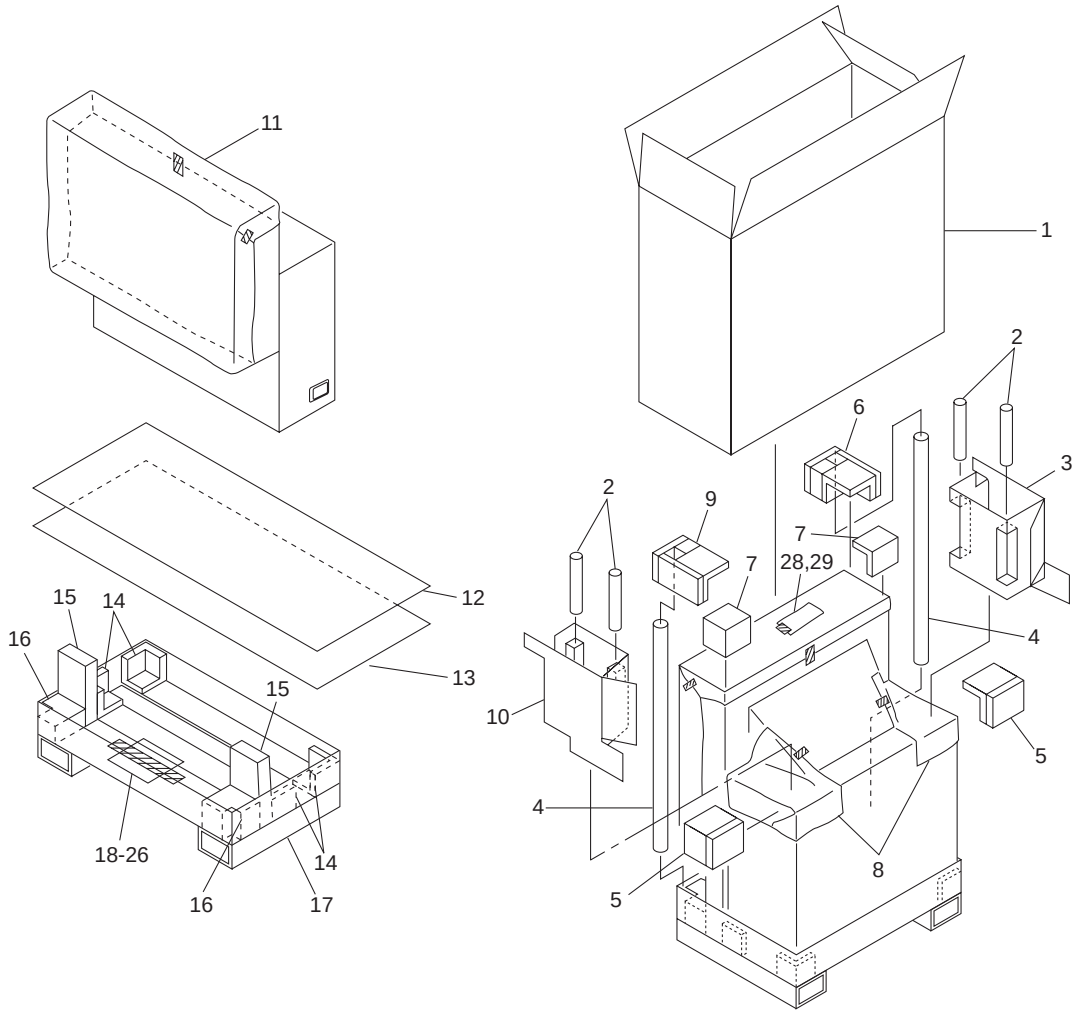

: Part is the charged section.
: Part is the high voltage generating points other than the charged section.
Fan connection A assy
Power supply assy
H.V/Deflection assy
Yoke connection assy B
B CRT drive assy
G CRT drive assy
Yoke connection assy A
Fan connection B assy
R CRT drive assy
Rear LED assy
Control assy
Conv. AMP assy
Convergence assy
Video assy

Fig. 3-1 Charged section and high voltage generating point

2. EXPLODED VIEWS AND PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *Screws adjacent to ▼ mark on product are used for disassembly.*
● *Parts marked by ☆ are important parts which relate in X-rays radiation. If any of these parts need to be replaced, always replace with specified parts.*

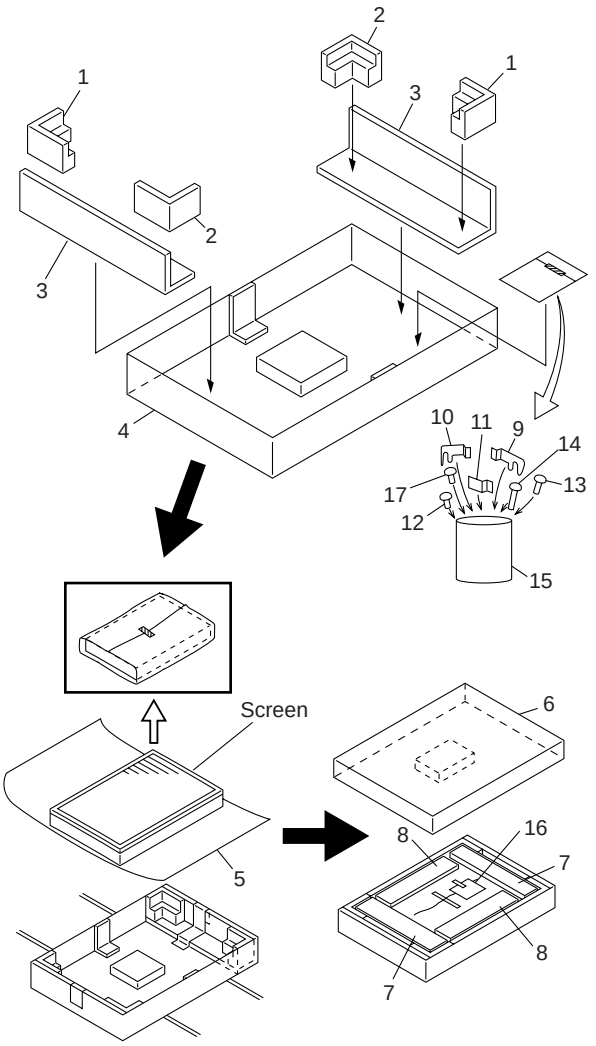
2.1 PACKING (MAIN BLOCK)



Parts List

Mark	No.	Description	Part No.
	1	UPPER CARTON	AHD2957
	2	SYLINDRICAL SUPPORT B	AHB1192
	3	CARD BOARD PAD L	AHB1193
	4	SYLINDRICAL SUPPORT A	AHB1191
	5	PAD D	AHA2194
	6	PAD C UPPER L	AHA2192
	7	CORNER PAD	AHA2189
	8	SHEET	AHG1278
	9	PAD C UPPER R	AHA2193
	10	CARD BOARD PAD R	AHB1194
	11	MIRROR MAT (50)	AHG1264
	12	MIRROR MAT B	BHG1039
NSP	13	VINYL SHEET S	AHG1111
	14	CORNER PAD	AHA2189
	15	PAD A	AHA2190
	16	PAD B	AHA2191
	17	UNDER CARTON	AHD2956
	18	OPERATING INSTRUCTIONS (English / French)	ARD1021
	19	BLACK LABEL	AAX2633
⚠	20	POWER CORD	ADG1167
	21	CONICAL NUT M8	ABN1032
NSP	22	VINYL BAG	AHG-064
	23	BOLT	HMB80Z450FZK
	24	BOLT	HMB80Z650FZK
NSP	25	VINYL BAG	AHG1083
	26	6P MINI DIN WITH CORD	BDE1020
NSP	27	VINYL BAG	PHL1006
	28	UL SAFE CARD	BRH1003
	29	REGISTRATION CARD	BRY1012

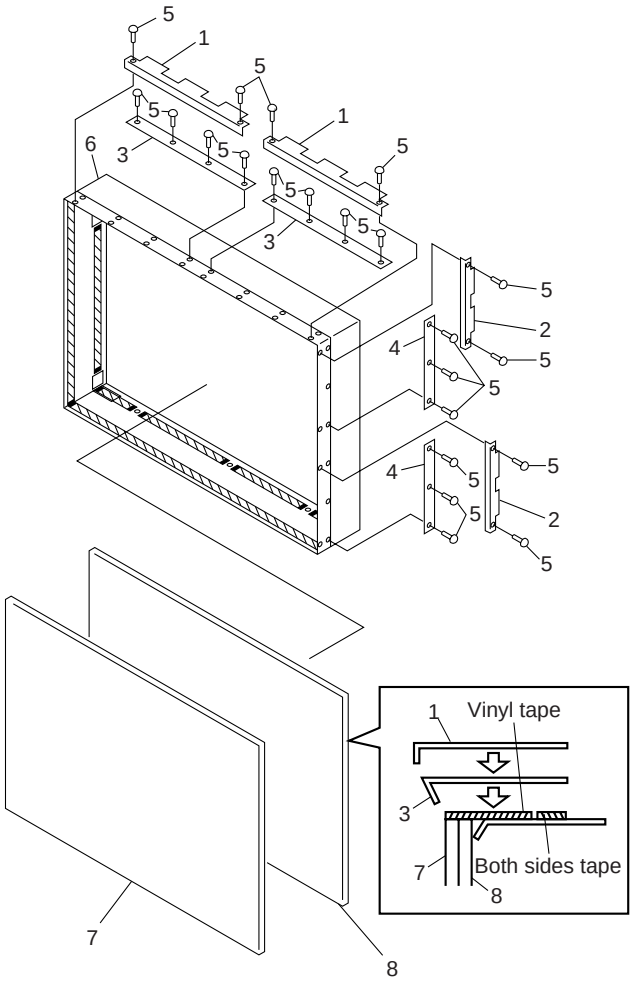
2.2 PACKING (SCREEN FRAME 50 ASSY)



Parts List

Mark	No.	Description	Part No.
	1	CORNER PAD B	AHA2196
	2	CORNER PAD A	AHA2195
	3	CARD BOARD	AHB1195
	4	UNDER CARTON	AHD2959
NSP	5	SHEET (50)	AHG1259
	6	UPPER CARTON	AHD2958
	7	PAD B	AHA2205
	8	PAD C	AHA2206
	9	METAL HOOK BRACKET L	ANG2268
	10	METAL HOOK BRACKET R	ANG2269
	11	SCREEN FRAME METAL FITTING	ANG2276
	12	SCREW	BBZ40P080FZK
	13	SCREW	BMZ60P100FZK
	14	SCREW	BYC40P180FZK
NSP	15	VINYL BAG	AHG-155
	16	CAUTION	ARM1140
	17	SCREW	BBZ40P120FZK

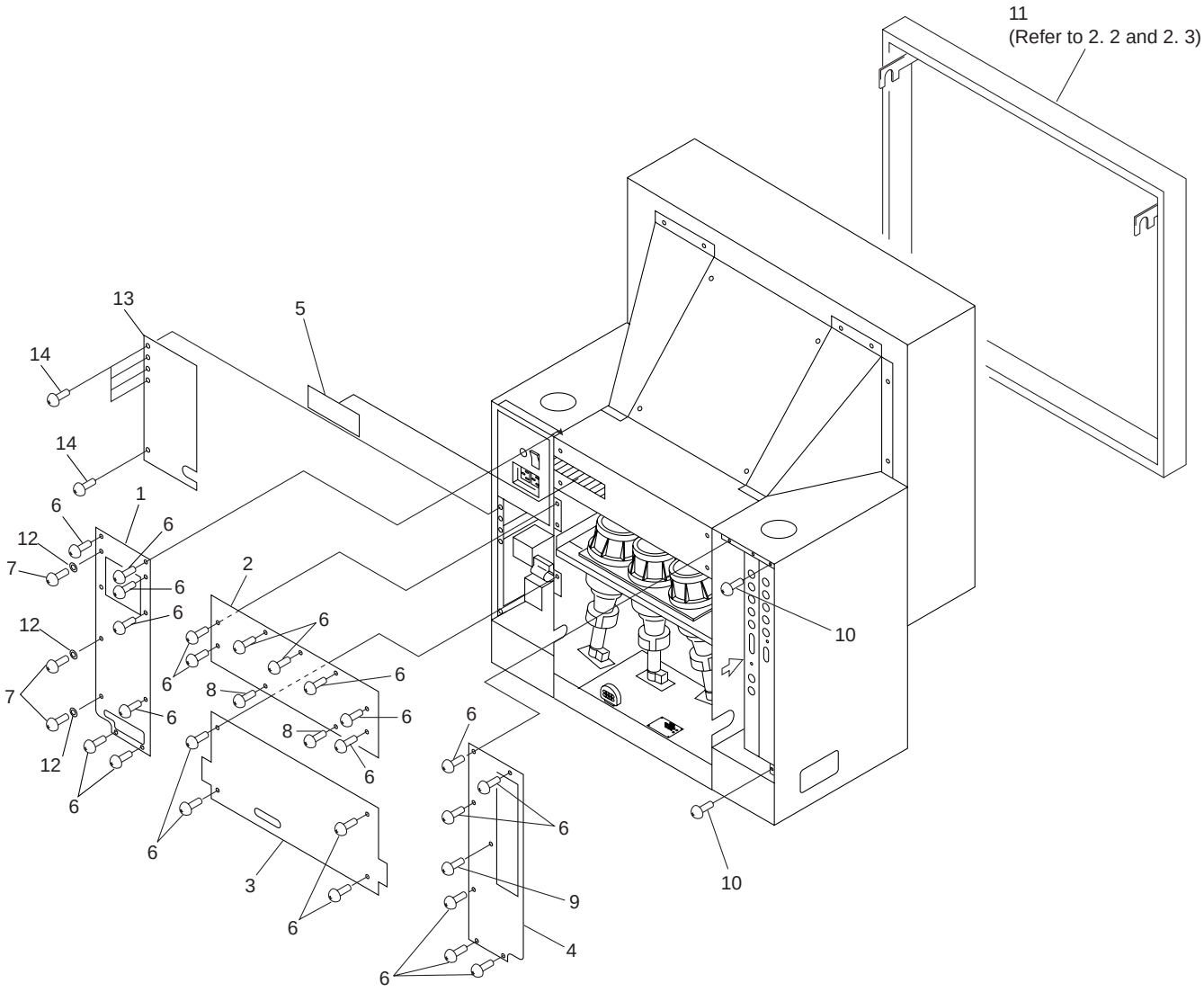
2.3 SCREEN FRAME 50 ASSY



Parts List

Mark	No.	Description	Part No.
	1	DELIVERY PANEL H	ANG2274
	2	DELIVERY PANEL V	ANG2275
	3	PC PANEL H (50)	AMR3080
	4	PC PANEL V (50)	AMR3081
	5	SCREW	BBZ30P050FZK
	6	SCREEN FRAME ASSY	ANA1580
	7	LENTICULAR SHEET (50)	AMR2963
	8	FRESNEL LENS (50) ASSY	AWL1436

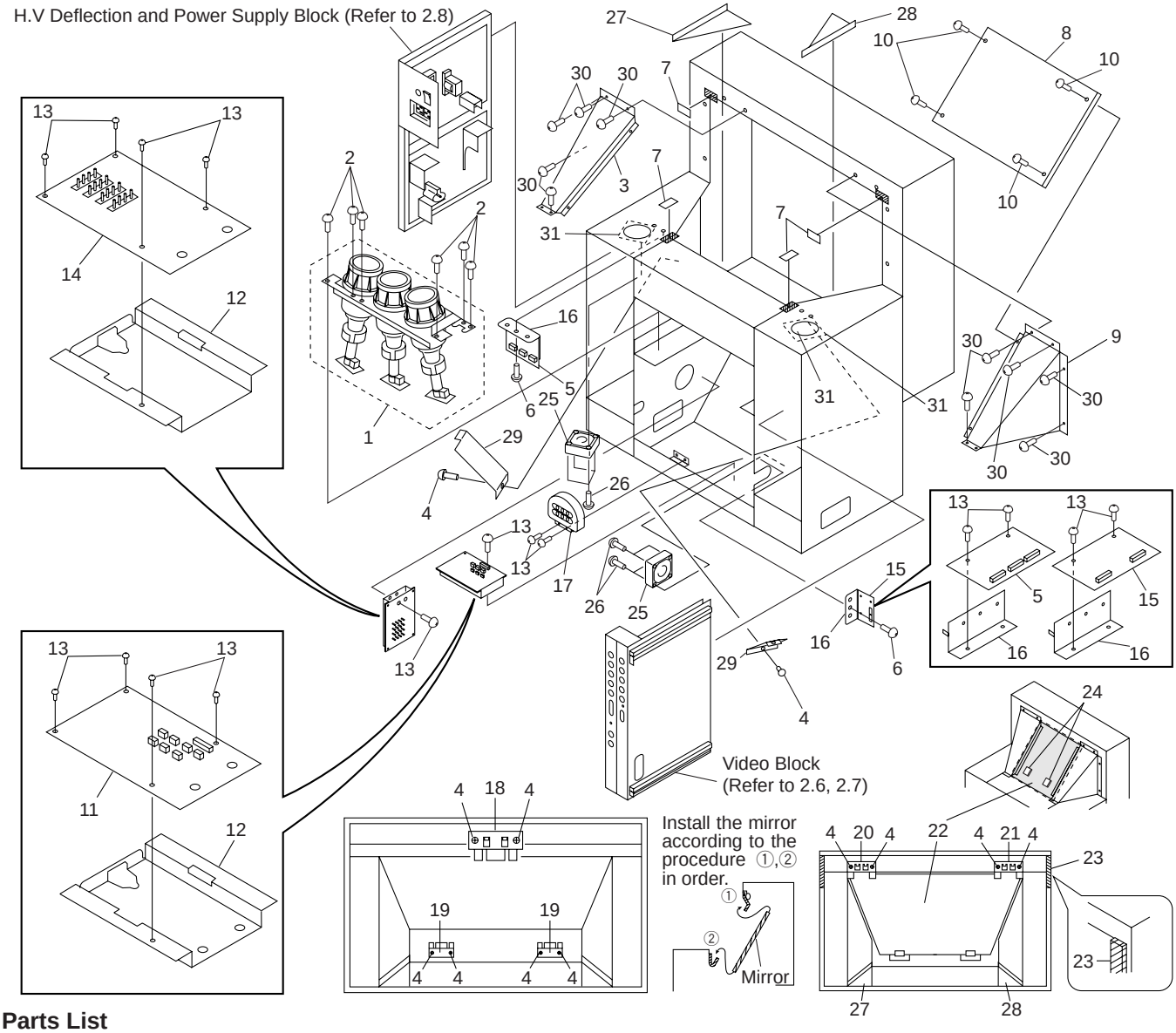
2.4 EXTERIOR BLOCK (1)



Parts List

Mark	No.	Description	Part No.
	1	BACK COVER R	AMM2930
	2	BACK COVER (UPPER)	AMM2890
	3	BACK COVER (UNDER)	AMM2891
	4	BACK COVER L	AMM2888
NSP	5	REAR PANEL SHEET	AAK2713
	6	SCREW	BYC35P200FZK
	7	SCREW	BBZ30P180FZK
	8	SCREW	BBZ40P080FZK
	9	SCREW	ABZ30P160FZK
	10	SCREW	BBZ30P080FZK
NSP	11	SCREEN FRAME 50 ASSY	AWL1426
	12	WASHER	ABE1074
NSP	13	SHIELD PANEL	ANK1564
	14	SCREW	ABA1006

2.5 EXTERIOR BLOCK (2)

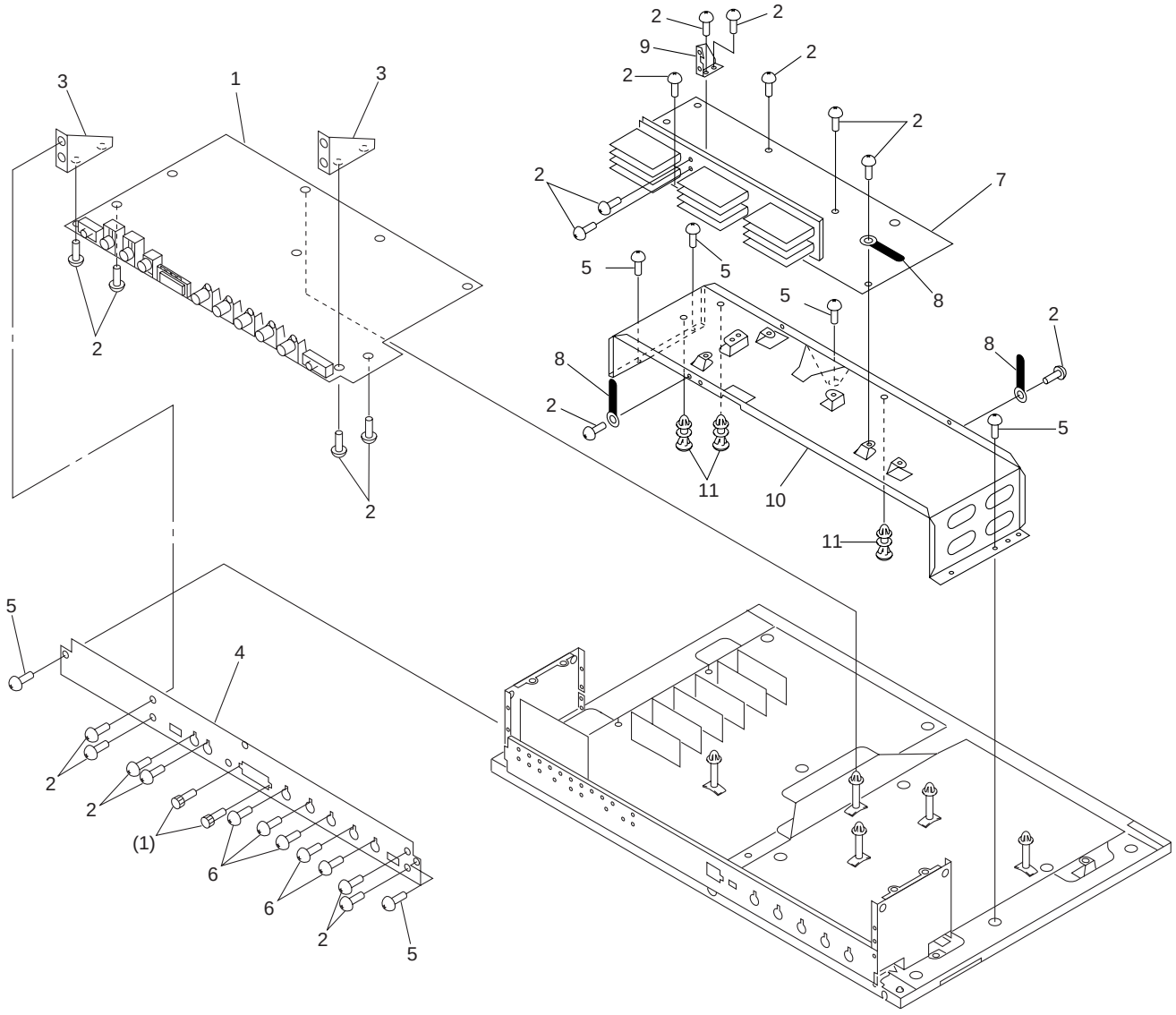

H.V Deflection and Power Supply Block (Refer to 2.8)
Video Block
(Refer to 2.6, 2.7)
Install the mirror according to the procedure ①,② in order.
Mirror

Parts List

Mark	No.	Description	Part No.
	1	CRT SERVICE ASSY (RGB)	AWY1409
	2	SCREW	ACZ40P120FMC
NSP	3	MIRROR CASE	ANE1567
	4	SCREW	BYC40P120FZK
	5	FAN CONNECTION A ASSY	AWZ6281
	6	SCREW	BYC40P120FMC
NSP	7	SHEET	AED1177
NSP	8	MIRROR COVER (UPPER)	AMM2881
NSP	9	MIRROR CASE L	ANE1566
	10	SCREW	ABZ30P080FZK
	11	YOKE CONNECTION ASSY A	AWZ6280
NSP	12	CR HOLDER	ANG1867
	13	SCREW	BBZ30P080FZK
	14	YOKE CONNECTION ASSY B	AWZ6308
	15	FAN CONNECTION B ASSY	AWZ6282

Mark	No.	Description	Part No.
NSP	16	VR HOLDER	ANG1956
⚠	17	FOCUS VOLUME (VR1)	ACX1062
NSP	18	MIRROR HOLDER C	ANG2072
NSP	19	MIRROR HOLDER (UNDER)	ANG2075
NSP	20	MIRROR HOLDER L	ANG2073
NSP	21	MIRROR HOLDER R	ANG2074
	22	MIRROR	AMR3079
	23	CUSHION	AEC1689
	24	CORNER CUSHION	AEC1466
	25	FAN MOTOR	AXM7012
	26	SCREW	BYC40P350FZK
	27	ENCLOSURE COVER L	AEC1761
	28	ENCLOSURE COVER R	AEC1762
	29	LIQUID PROTECT COVER	AEC1771
	30	SCREW	BYC35P120FZK
	31	NET	ANG2279

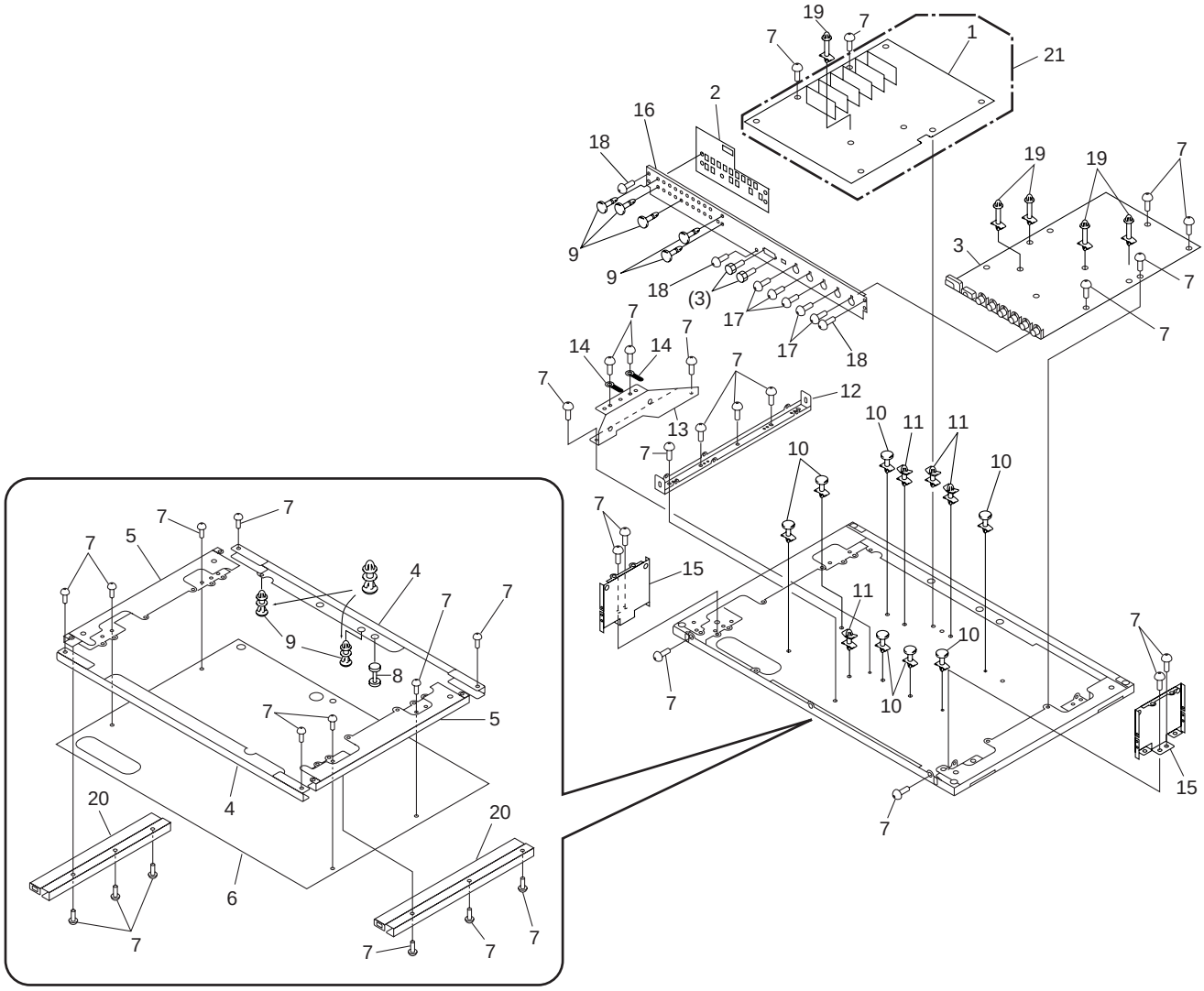
2.6 VIDEO BLOCK (1)



Parts List

Mark	No.	Description	Part No.
	1	CONTROL ASSY	AWV1667
	2	SCREW	BBZ30P080FZK
NSP	3	PCB HOLDER A	ANG-516
	4	REAR PANEL C	ANC2314
	5	SCREW	ABZ30P080FZK
	6	SCREW	BMZ30P060FZK
	7	CONV.AMP ASSY	AWZ6294
	8	BINDER	AEP-215
	9	HOLDER	ANG2278
NSP	10	CONVER AMP CHASSIS	ANA1559
NSP	11	PCB HOLDER	AEC1097

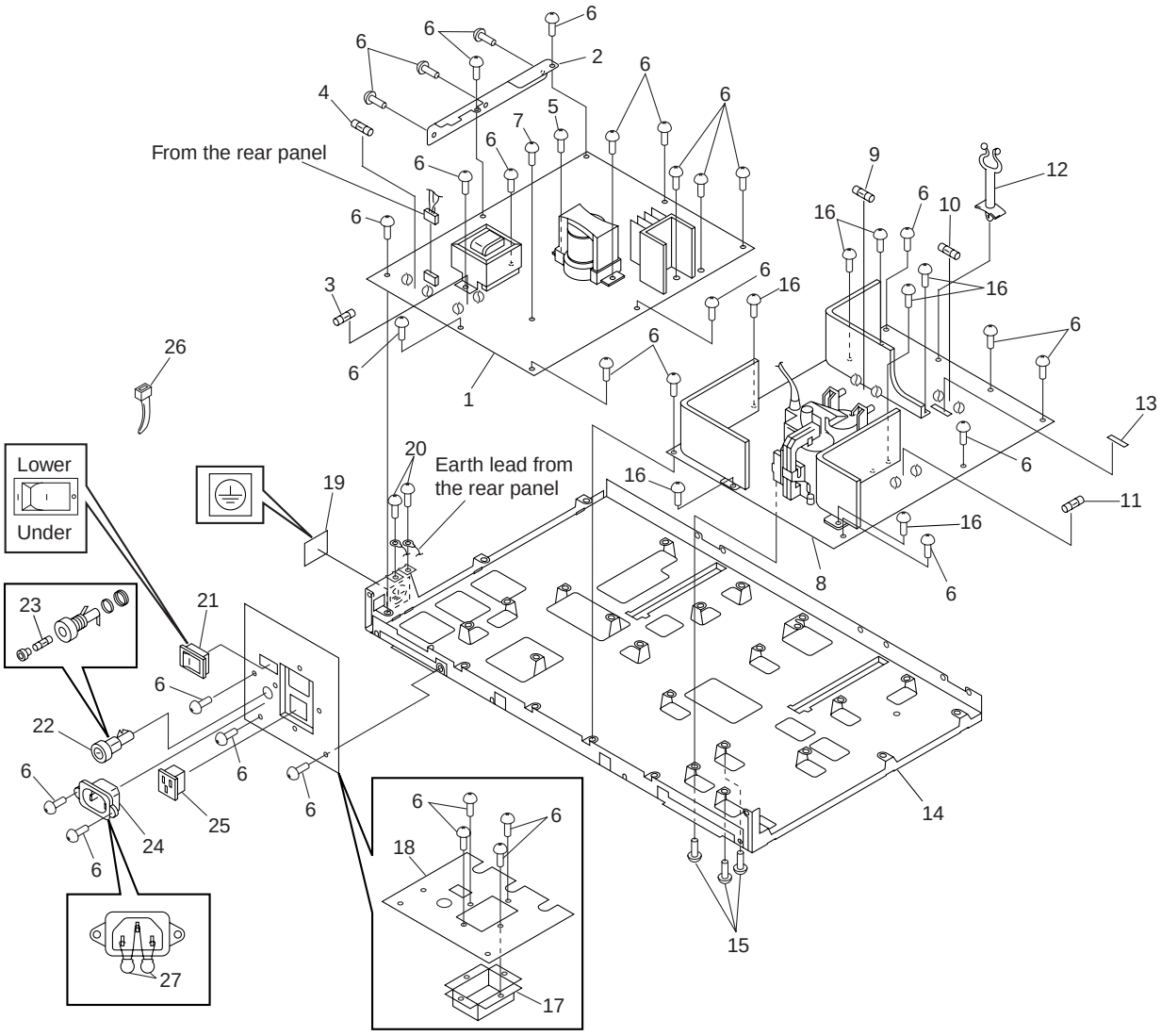
2.7 VIDEO BLOCK (2)



Parts List

Mark	No.	Description	Part No.
	1	CONVERGENCE ASSY	AWZ6285
	2	REAR LED ASSY	AWZ6284
	3	VIDEO ASSY	AWV1670
NSP	4	PCB FRAME A	BNG1243
NSP	5	PCB FRAME B	BNG1244
NSP	6	CHASSIS	ANA1523
	7	SCREW	BBZ30P080FZK
NSP	8	CARD SPACER A	BEC1120
NSP	9	PCB HOLDER	ACE1097
NSP	10	CARD SPACER B	BEC1121
NSP	11	PC SUPPORT	BEC1117
NSP	12	FRAME 3	ANG1784
NSP	13	EARTH PLATE A	ANG1957
	14	BINDER	AEP-215
NSP	15	REAR PANEL FRAME	BNG1242
	16	REAR PANEL D	ANC2315
	17	SCREW	BMZ30P060FZK
	18	SCREW	ABZ30P080FZK
NSP	19	PC SUPPORT	AEC1118
NSP	20	HOLDER A	ANG2259
NSP	21	CONVERGENCE ASSY	AWV1672

2.8 H.V DEFRECTION AND POWER SUPPLY BLOCK

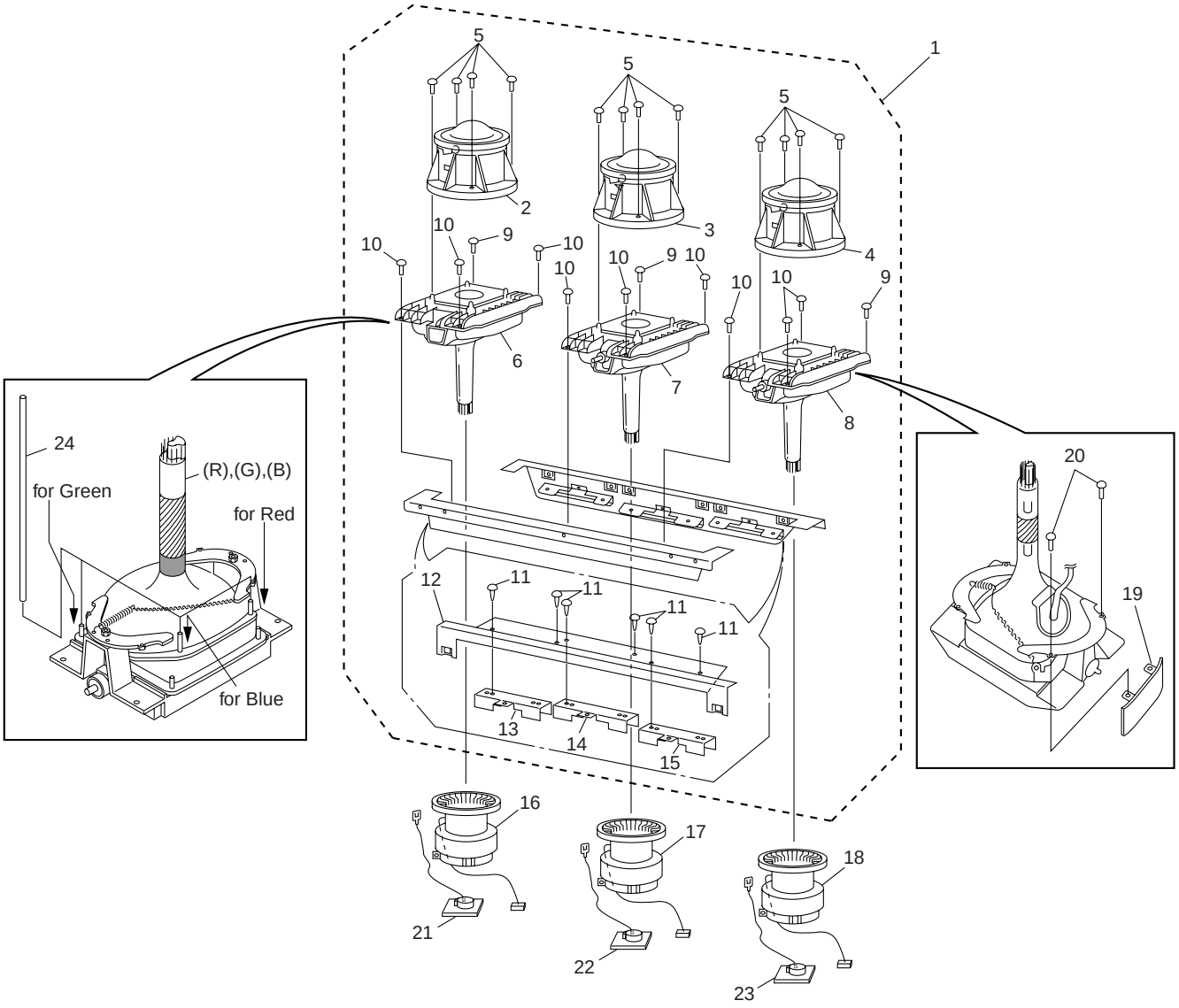


Parts List

Mark	No.	Description	Part No.
⚠☆	1	POWER SUPPLY ASSY	BWV1044
NSP	2	PUSH HOLDER	ANG2262
⚠	3	FUSE (FU5001,125mA/125V)	AEK1010
⚠	4	FUSE (FU5000, 6.3A/125V)	AEK-309
	5	SCREW	ABZ30P120FZK
	6	SCREW	BBZ30P080FZK
	7	SCREW	ABA1006
	8	H.V/DEFRECTION ASSY	AWV1669
⚠	9	FUSE (FU6001, 4A/125V)	AEK1018
⚠	10	FUSE (FU6003, 500mA/125V)	AEK1010
⚠	11	FUSE (FU6002, 4A/125V)	AEK1018
NSP	12	LEAD CLAMPER	AEP-329
	13	FUSE INDICATED CARD	BAX1064
NSP	14	POWER.DEF.CHASSIS	ANA1558
	15	SCREW	VPZ40P120FMC
	16	SCREW	ABA1099
	17	POWER REAR PANEL B	ANC2308
	18	POWER REAR PANEL A	ANC2316
NSP	19	LABEL (EARTH)	BAX1014

Mark	No.	Description	Part No.
	20	SCREW	PMB40P080FMC
⚠	21	SEESAW SWITCH (S1)	BSM1008
⚠	22	FUSE HOLDER	BKR1003
⚠	23	FUSE (FU1, 10A/125V)	AEK1035
⚠	24	1P AC INLET	AKP1115
⚠	25	1P AC OUTLET	AKP1181
	26	BINDER	AEC-093
⚠	27	CAPACITOR (C1,C2)	ACG7007 (1500p/AC250V)
OTHERS		4P HOUSING WIRE (J1)	ADX1610
		1P LEAD WIRE (J2)	ADX1764
		WIRE HARNESS (J13)	ADX2449
		5P HOUSING WIRE (J16)	ADX2464
		2P HOUSING WIRE (J11)	BDX1261
		5P HOUSING WIRE (J14)	BDX1342
		12P HOUSING WIRE (J15)	BDX1343

2.9 CRT BLOCK

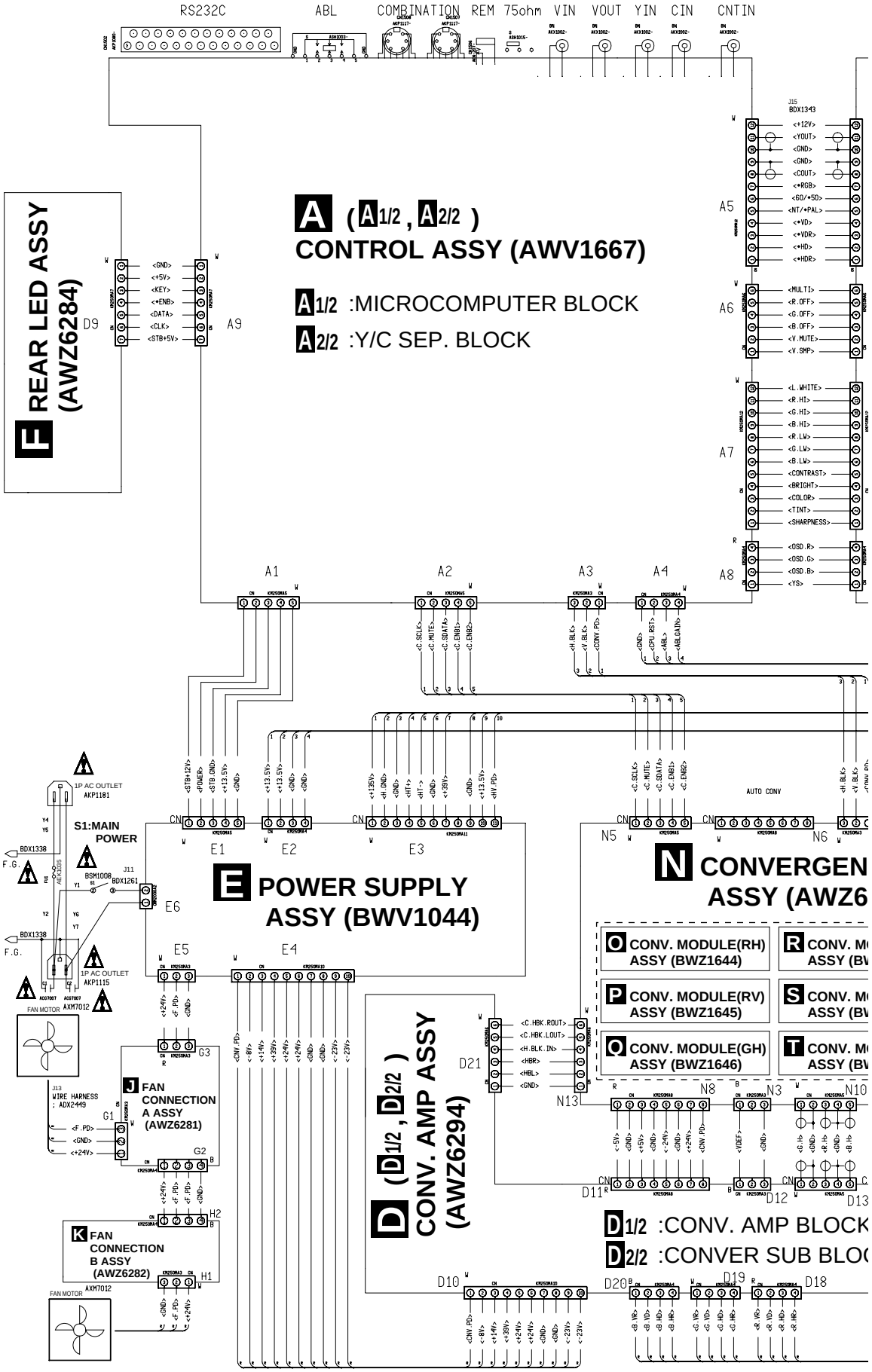


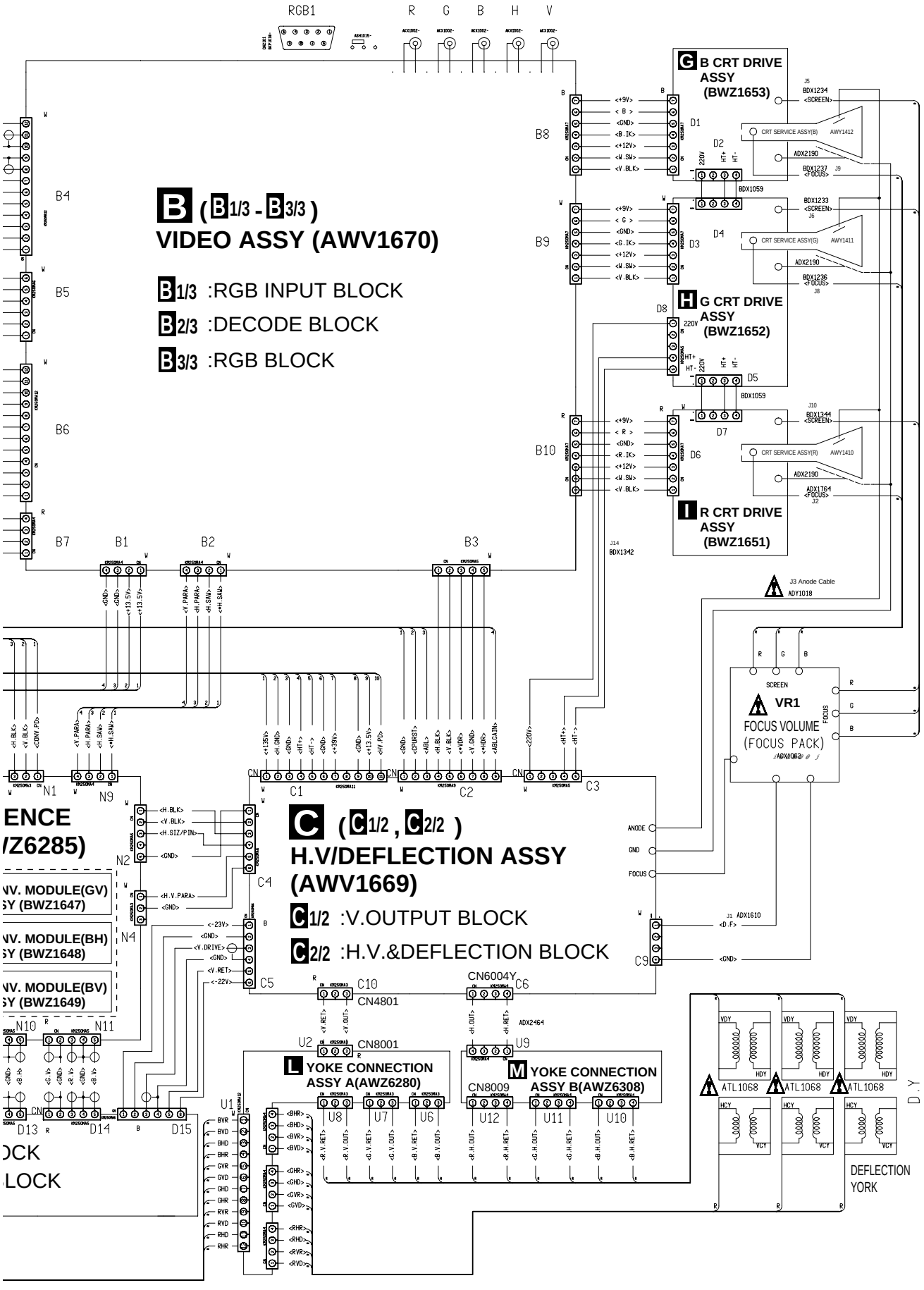
Parts List

Mark	No.	Description	Part No.
	1	CRT SERVICE ASSY (RGB)	AWY1409
☆	2	LENS ASSY 50, (R)	AMR2482
☆	3	LENS ASSY 50, (G)	AMR2482
☆	4	LENS ASSY 50, (B)	AMR2482
	5	SCREW	AMZ40P080FZK
☆	6	CRT SERVICE ASSY (R)	AWY1410
☆	7	CRT SERVICE ASSY (G)	AWY1411
☆	8	CRT DERVICE ASSY (B)	AWY1412
	9	SCREW	FBT40P080FZK
	10	SCREW	ABA1163
	11	SCREW	BBZ40P080FZK
NSP	12	CRT FRAME	ANA1560
NSP	13	CRT HOLDER B	BNG1161
NSP	14	CRT HOLDER C	ANG2263
NSP	15	CRT HOLDER A	BNG1160
⚠	16	DEFRECTION YOKE (B)	ATL1068
⚠	17	DEFRECTION YOKE (G)	ATL1068
⚠	18	DEFRECTION YOKE (R)	ATL1068
	19	X-RAY SHIELD	ANF1080
	20	SCREW	BBZ30P080FZK
	21	B CRT DRIVER ASSY	BWZ1653
	22	G CRT DRIVE ASSY	BWZ1652
	23	R CRT DRIVE ASSY	BWZ1651
	24	TUBE S	ADN1005
⚠	25	ANODE CABLE	ADY1018

3. SCHEMATIC DIAGRAM

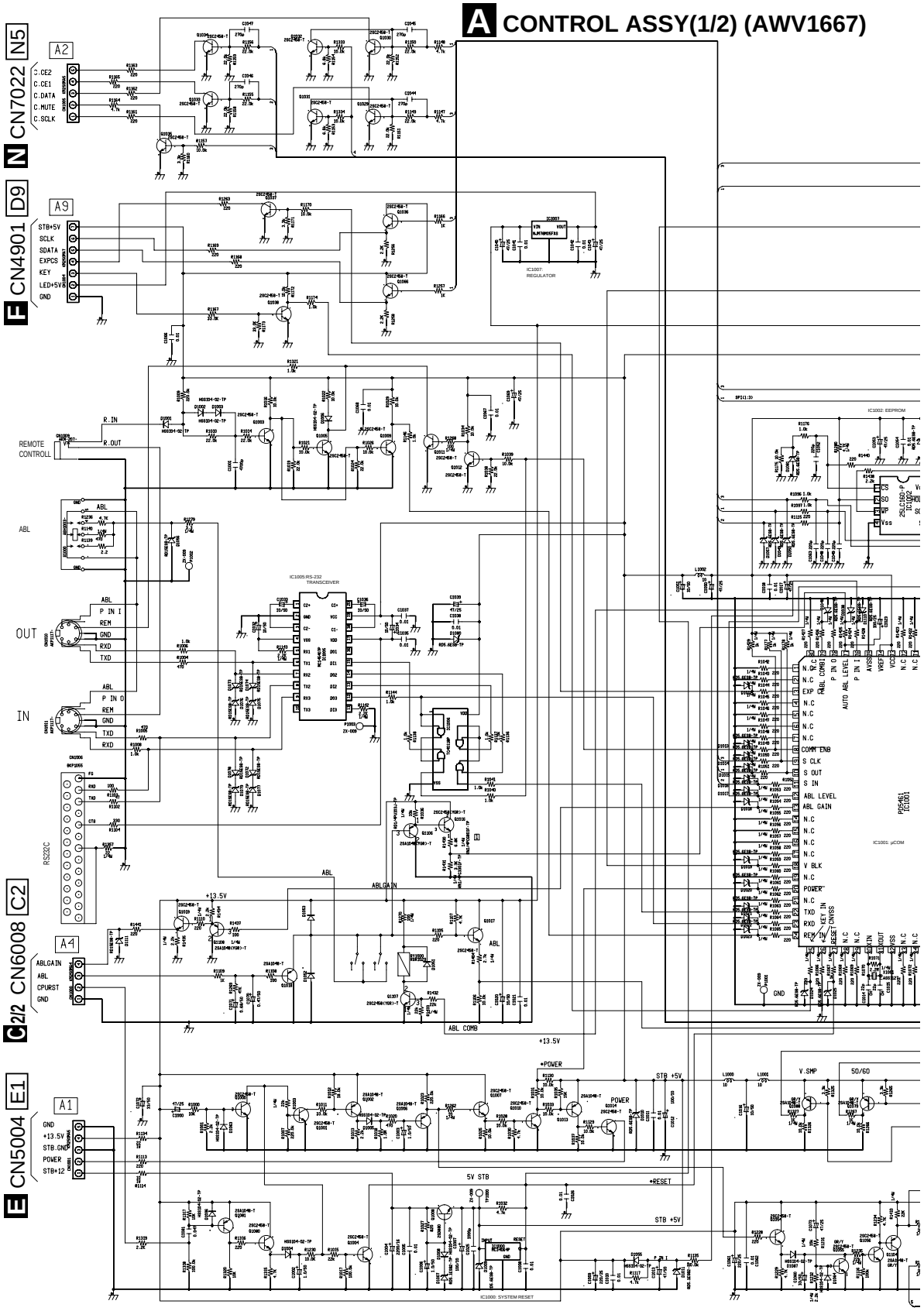
3-1. OVERALL CONNNECTION DIAGRAM

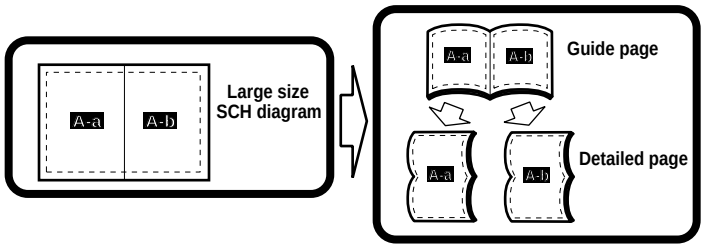



B (B1/3 - B3/3)
VIDEO ASSY (AWV1670)
B1/3 :RGB INPUT BLOCK
B2/3 :DECODE BLOCK
B3/3 :RGB BLOCK
G B CRT DRIVE ASSY (BWZ1653)
H G CRT DRIVE ASSY (BWZ1652)
I R CRT DRIVE ASSY (BWZ1651)
C (C1/2 , C2/2)
H.V/DEFLECTION ASSY (AWV1669)
C1/2 :V.OUTPUT BLOCK
C2/2 :H.V.&DEFLECTION BLOCK
L YOKE CONNECTION ASSY A(AWZ6280)
M YOKE CONNECTION ASSY B(AWZ6308)
VR1
FOCUS VOLUME (FOCUS PACK)
DEFLECTION YORK
RGB1
SCREEN
FOCUS
ANODE
GND
FOCUS

3.2 CONTROL ASSY(1/2)

A CONTROL ASSY(1/2) (AWV1667)



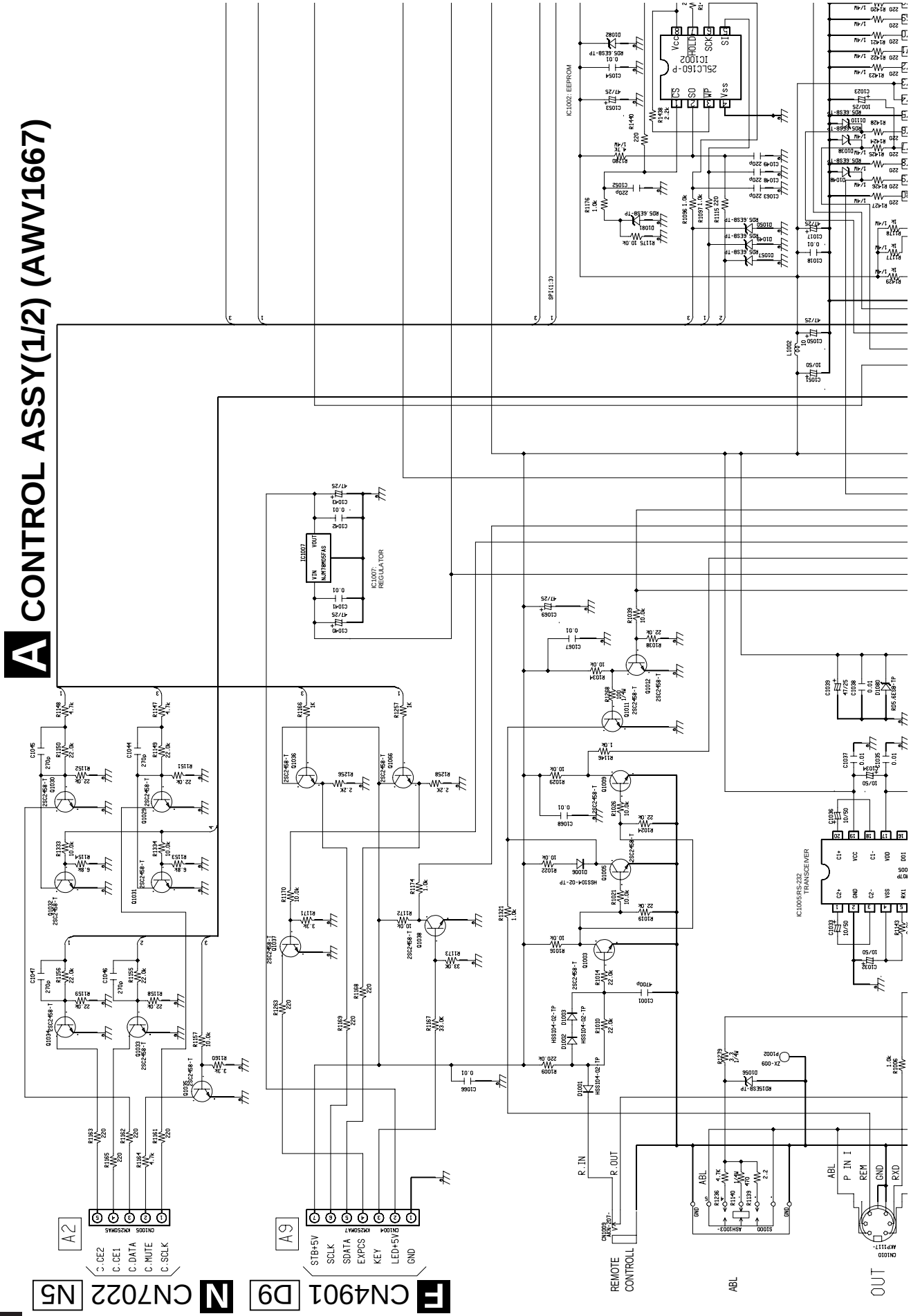


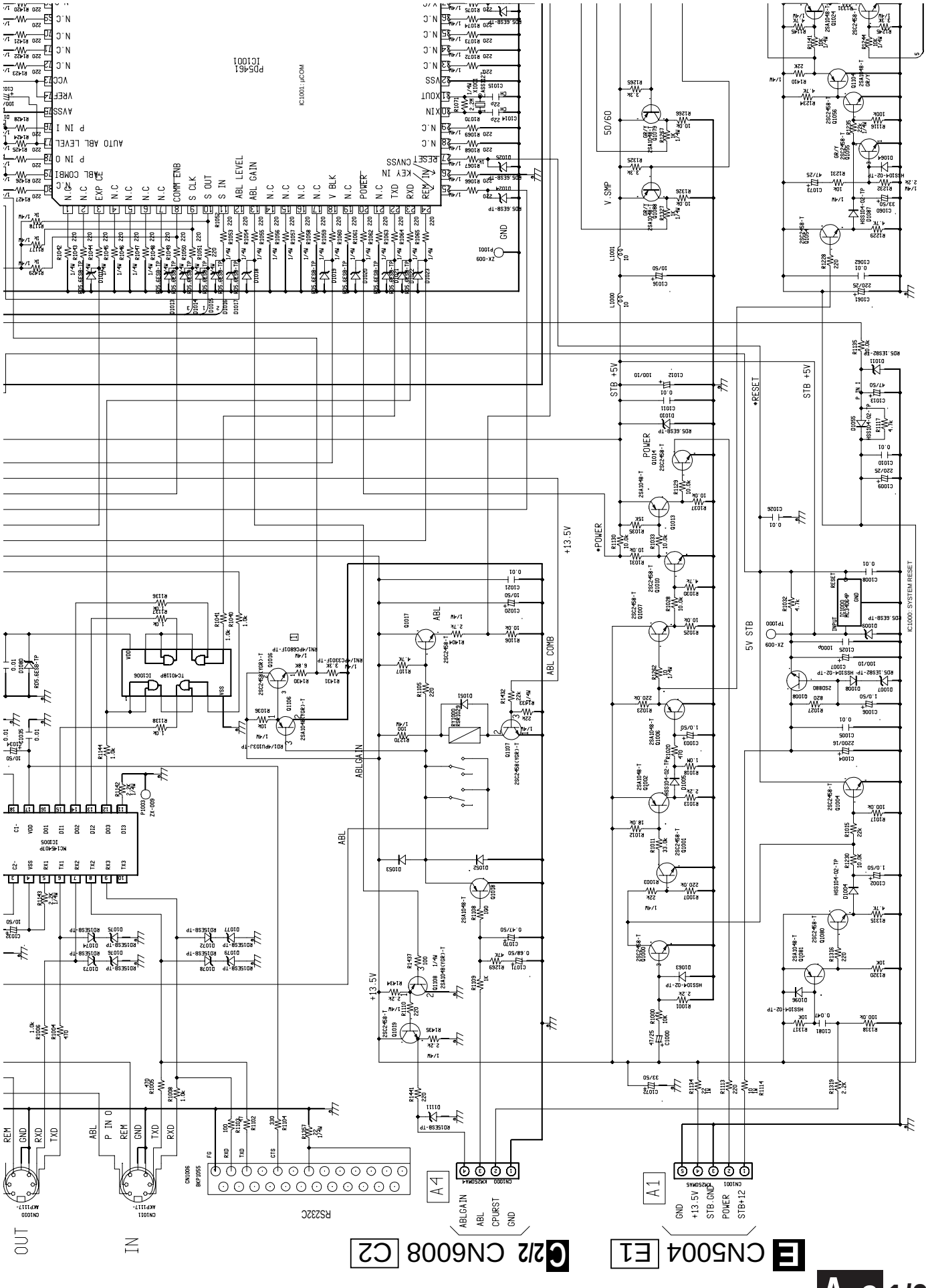
A3
N CN7218 N1
A8
B3/3 CN2505 B7
B2/3 CN2202 B6
A7
A2/2
B3/3 CN2506 B5
A6

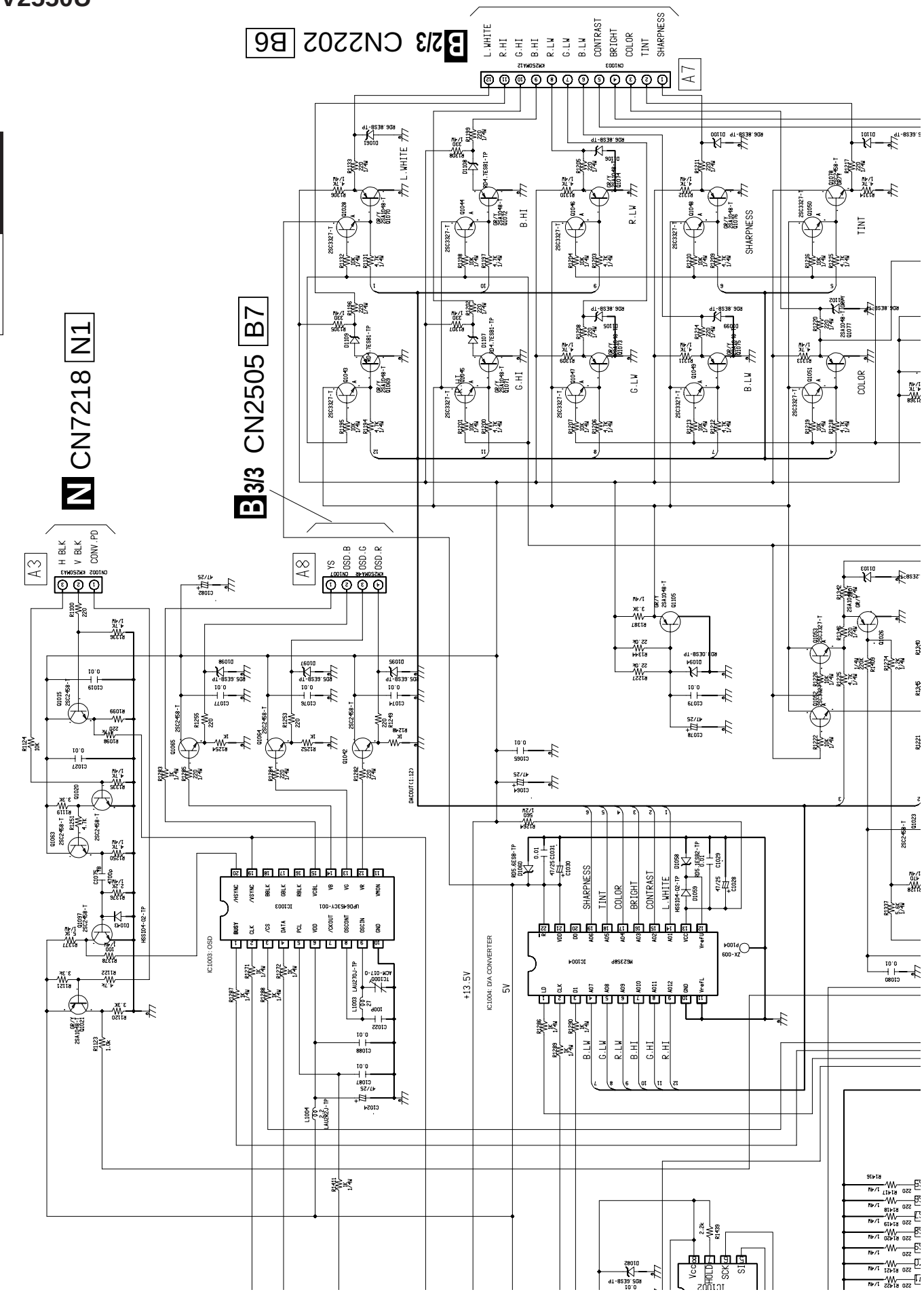
A CONTROL ASSY(1/2) (AWV1667)

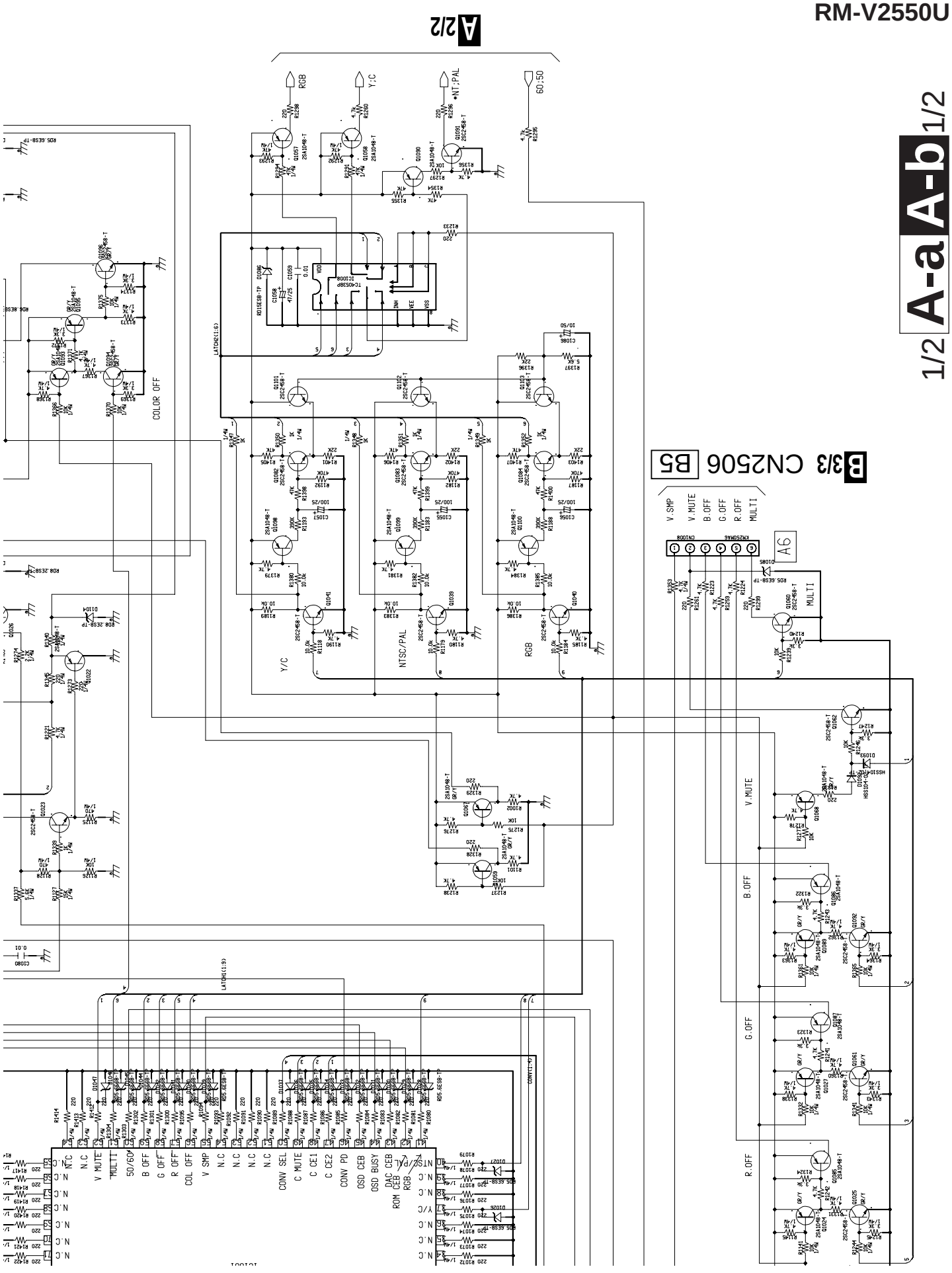
A-a A-b 1/2

1/2



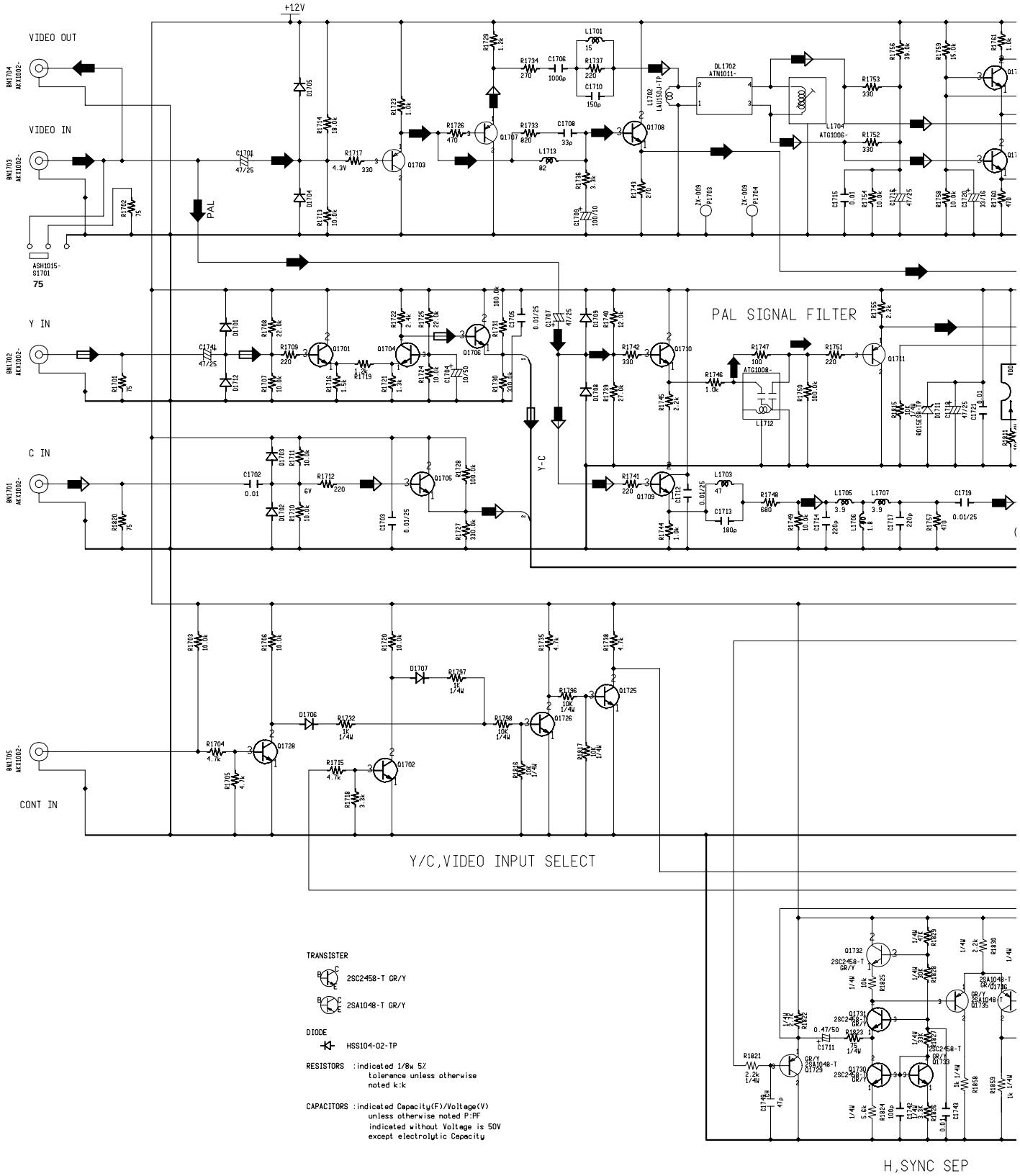

1/2 A-a A-b 1/2
CN5004 E1
CN6008 C2 C2/2
ABLGAIN ABL CPURST GND
GND +13.5V STB.GND POWER STB+12
OUT
IN
RS232C
IC1000: SYSTEM RESET
IC1001: µCOM
PD5461
TC4011BP
MC145407P
STB +5V
5V STB
*RESET
*POWER
+13.5V
ABL COMB
ABLGAIN
ABL
V SMP
50/60
POWER
GND
RESET
KEY IN
REM IN
TXD
RXD
ABL LEVEL
ABL GAIN
S CLK
S OUT
S IN
COMM ENB
AUTO ABL LEVEL
ABL COMBI
P IN I
P IN O
REM
GND
RXD
TXD

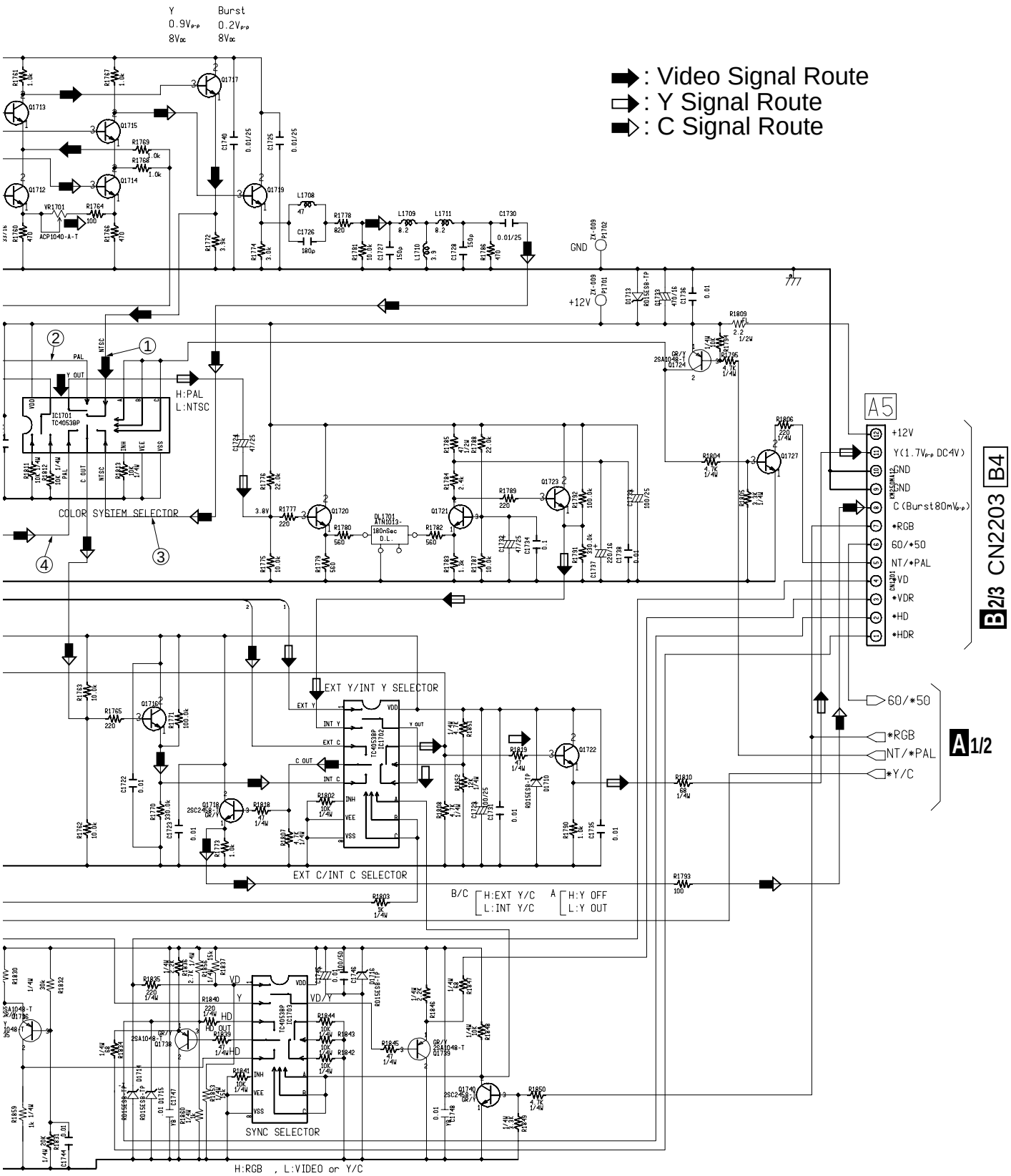

A-a 1/2
A-b 1/2
B 2/3 CN2202 B6
B 3/3 CN2505 B7
N CN7218 N1
L.WHITE
R.HI
G.HI
B.HI
R.LW
G.LW
B.LW
CONTRAST
BRIGHT
COLOR
TINT
SHARPNESS
H BLK
V BLK
CONV.PD
VS
OSD.B
OSD.G
OSD.R
IC1003: OSD
IC1004: D/A CONVERTER
+13.5V
5V


A 2/2
B 3/3 CN2506 B5
A6
1/2 A-a A-b 1/2
A-b 1/2

3.3 CONTROL ASSY(2/2)

A CONTROL ASSY(2/2) (AWV1667)
•Y/C SEPARATION BLOCK

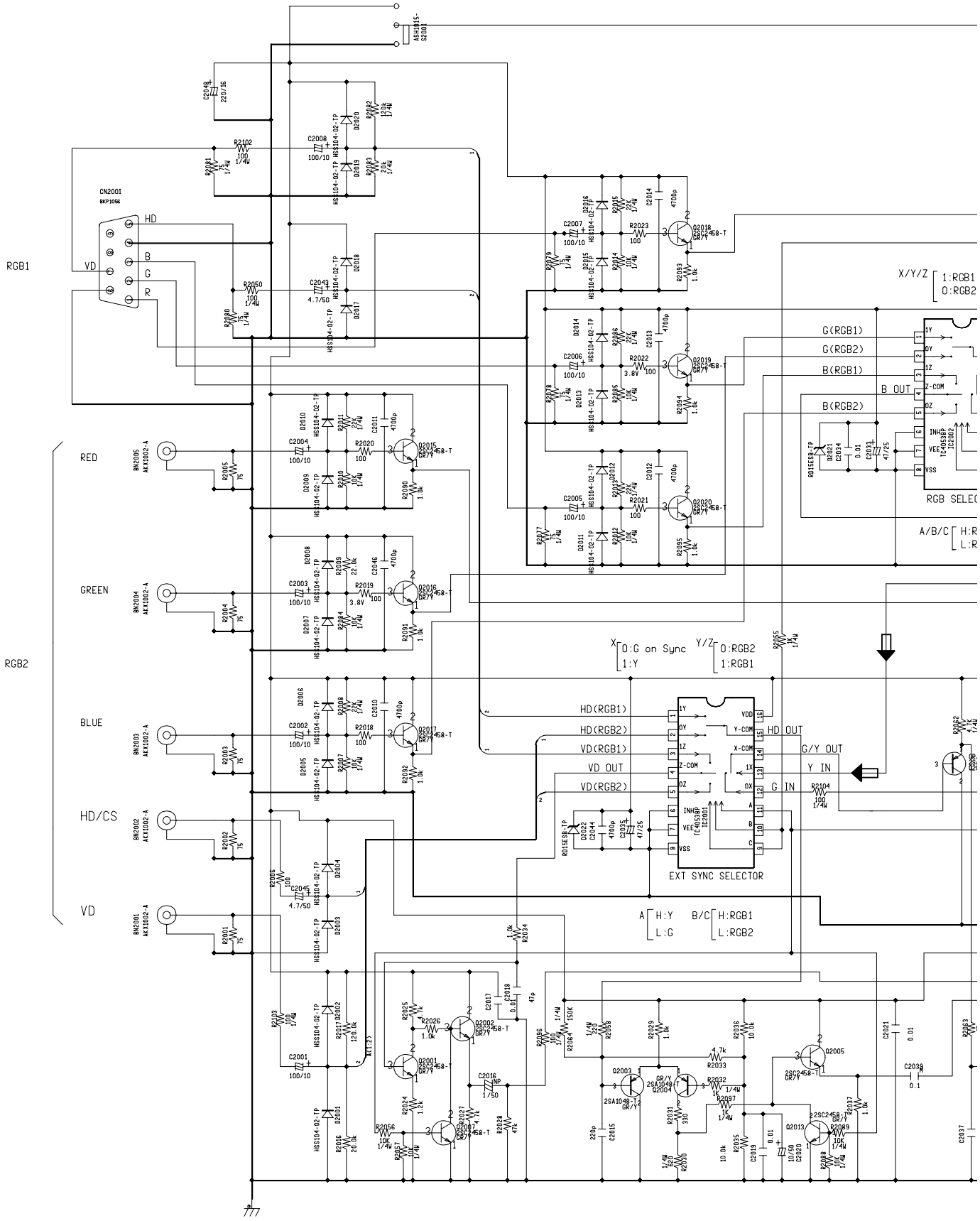



Y
0.9Vp-p
8Vdc
Burst
0.2Vp-p
8Vdc
: Video Signal Route
: Y Signal Route
: C Signal Route
H:PAL
L:NTSC
COLOR SYSTEM SELECTOR
EXT Y/INT Y SELECTOR
EXT C/INT C SELECTOR
B/C H:EXT Y/C L:INT Y/C
A H:Y OFF L:Y OUT
SYNC SELECTOR
H:RGB , L:VIDEO or Y/C
A5
+12V
Y(1.7Vp-p DC4V)
GND
GND
C(Burst80mVp-p)
*RGB
G0/*50
NT/*PAL
*VD
*VDR
*HD
*HDR
CN2201
B2/3 CN2203 B4
G0/*50
*RGB
NT/*PAL
*Y/C
A1/2

3.4 VIDEO ASSY(1/3)

B VIDEO ASSY (1/3)(AWV1670)

•RGB INPUT BLOCK



DIODE

HSS104-02-TP

TRANSISTER

2SC2458-T

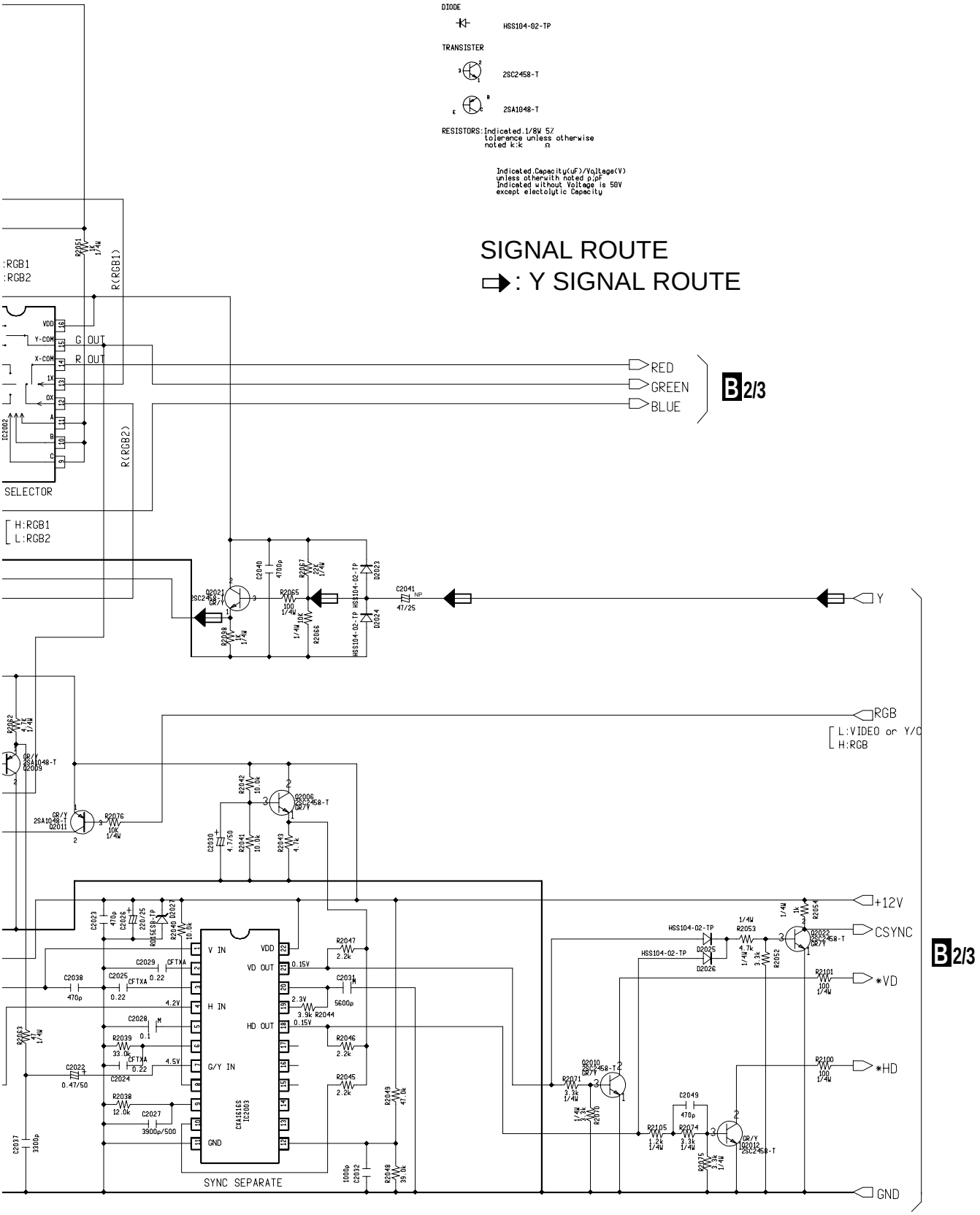
2SA1048-T

RESISTORS: Indicated.1/8W 5%
tolerance unless otherwise
noted k:k Ω

Indicated.Capacity(uF)/Voltage(V)
unless otherwith noted p:pF
Indicated without Voltage is 50V
except electolytic Capacity

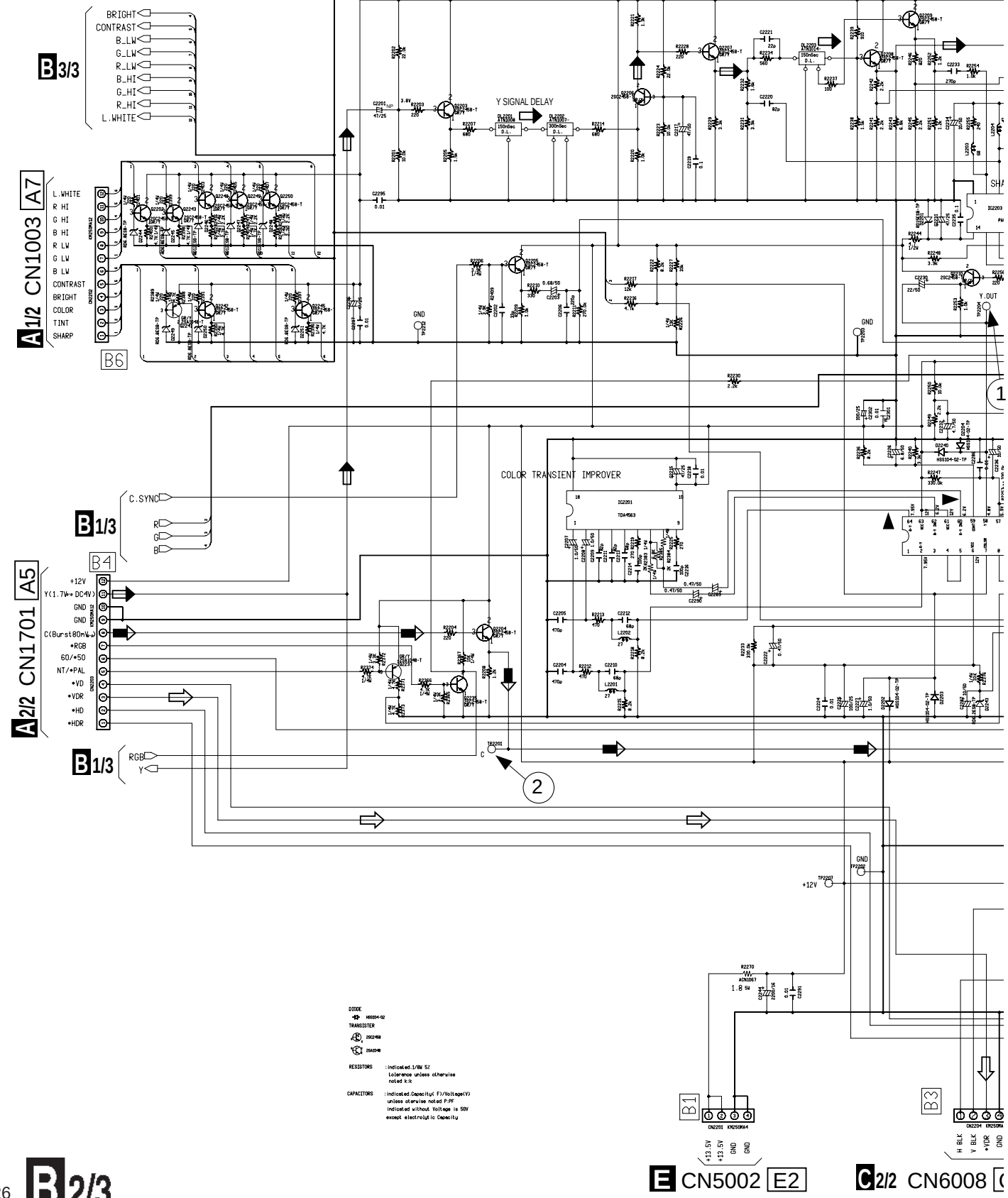
SIGNAL ROUTE

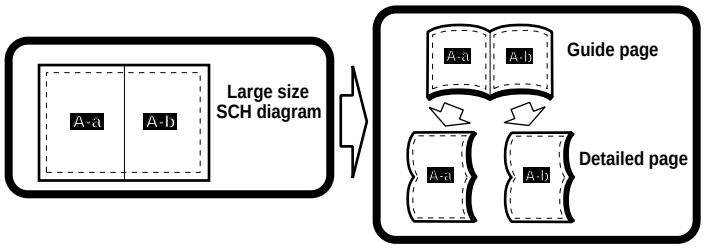
: Y SIGNAL ROUTE

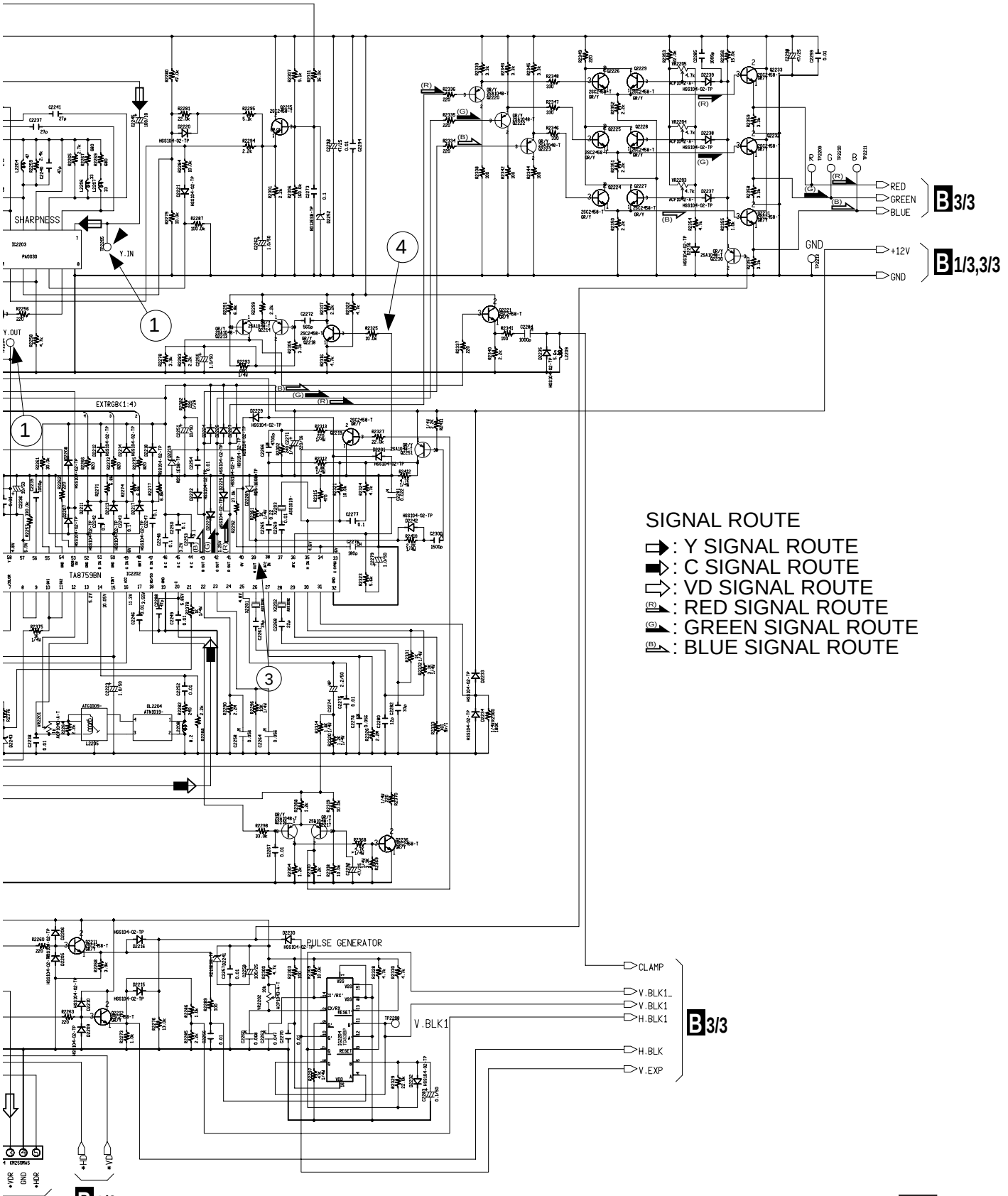


3.5 VIDEO ASSY(2/3)

B VIDEO ASSY(2/3) (AWV1670)
•DECODE BLOCK

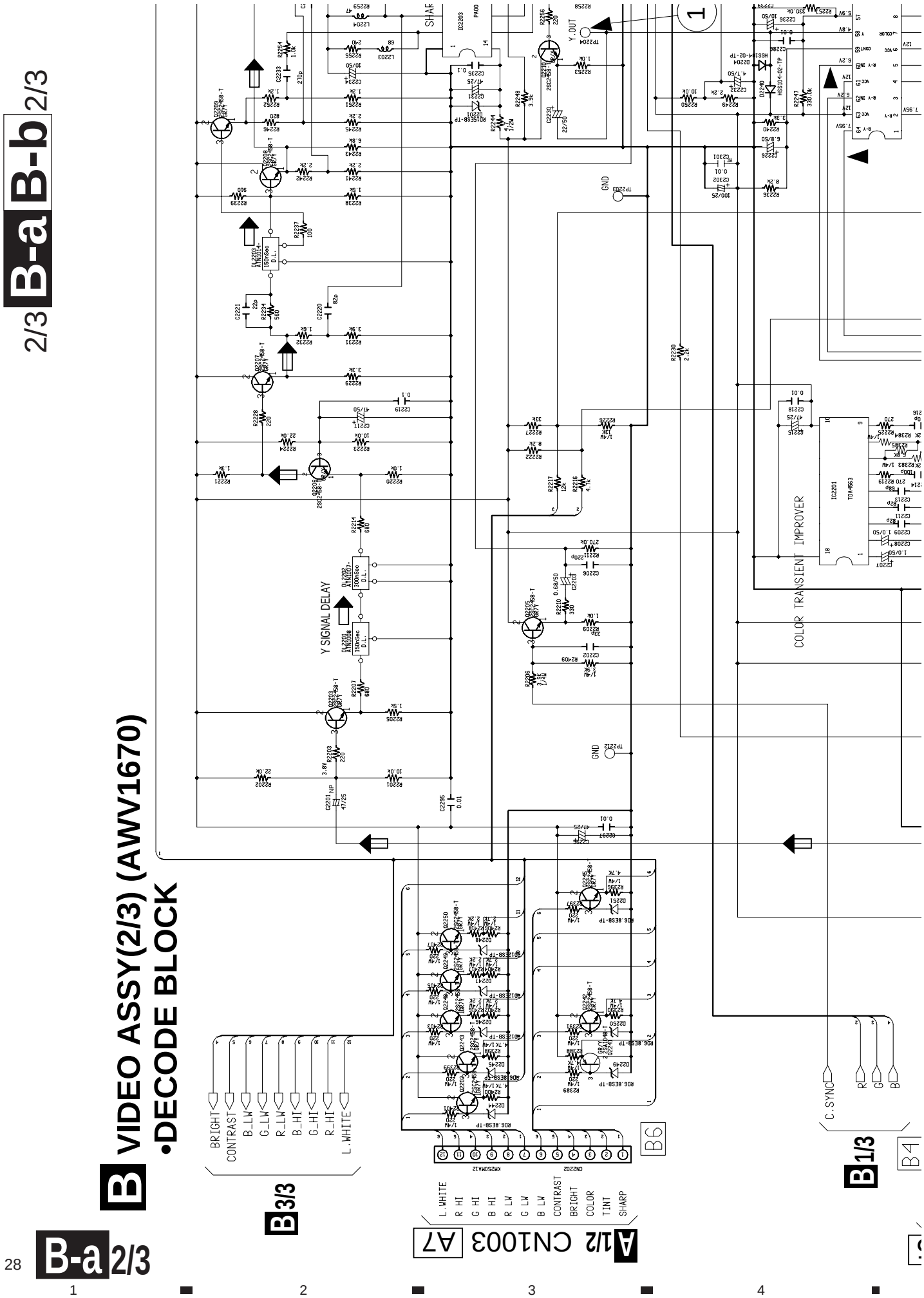


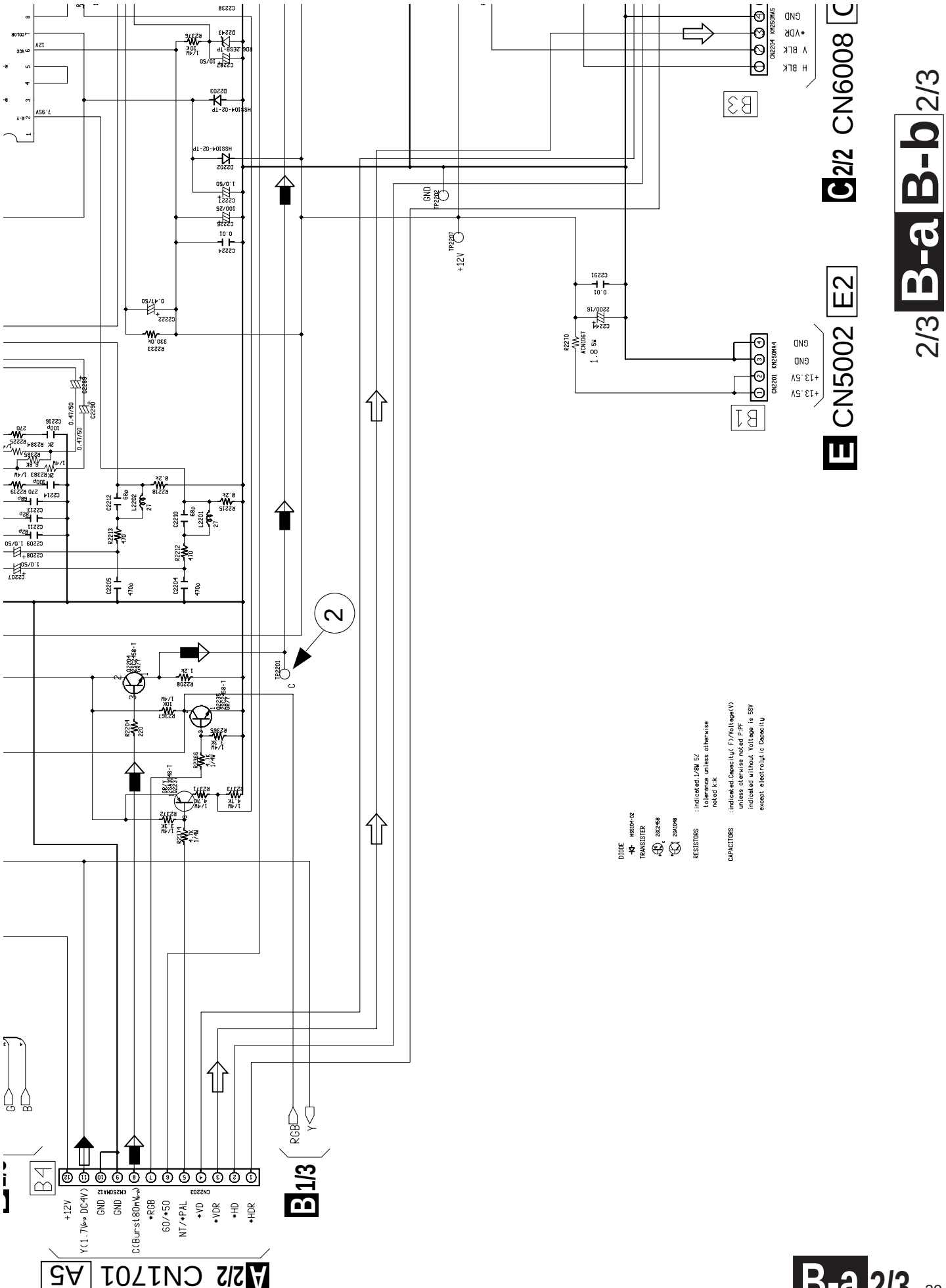


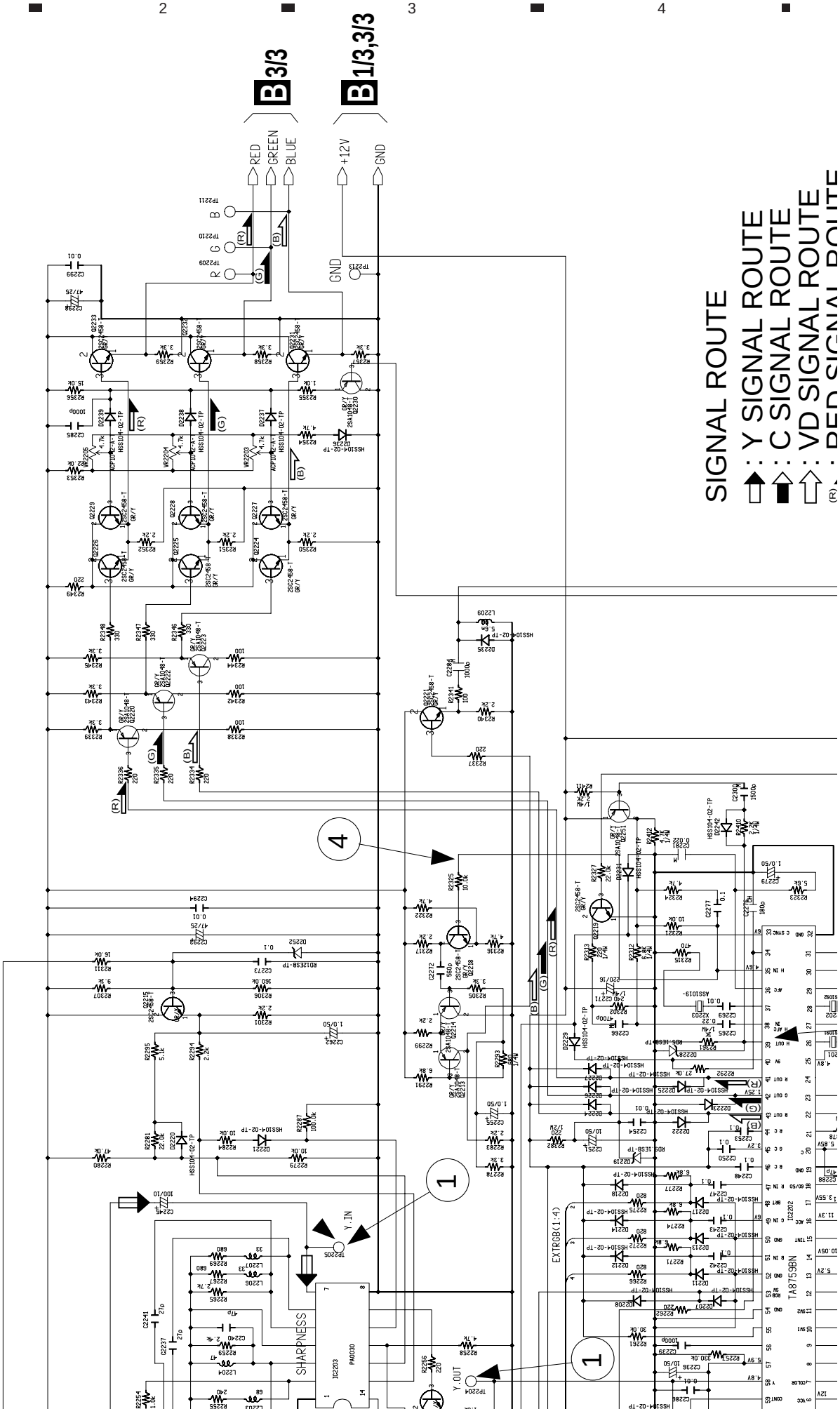


SIGNAL ROUTE

- : Y SIGNAL ROUTE
- : C SIGNAL ROUTE
- : VD SIGNAL ROUTE
- (R) : RED SIGNAL ROUTE
- (G) : GREEN SIGNAL ROUTE
- (B) : BLUE SIGNAL ROUTE


B VIDEO ASSY(2/3) (AWV1670)
•DECODE BLOCK
B-a 2/3
2/3 B-a B-b 2/3
Y SIGNAL DELAY
COLOR TRANSIENT IMPROVER
SHARP
COLOR
TINT
CONTRAST
BRIGHT
R HI
G HI
B HI
R LW
G LW
B LW
L.WHITE
A1/2 CN1003 A7
B3/3
B1/3
BRIGHT
CONTRAST
B_LW
G_LW
R_LW
B_HI
G_HI
R_HI
L.WHITE
C.SYNC
R
G
B
B6
B4
GND
Y.OUT


B-a 2/3
B-b 2/3
C 2/2 CN6008 C
E CN5002 E2
A 2/2 CN1701 A5
B1/3
B4
B3
B1
2
+12V
GND
GND
C(Burst.80m✱✱)
✱RGB
60/✱50
NIT/✱PAL
✱VD
✱VDR
✱HD
✱HDR
Y(1.7M✱✱ DC4V)
H BLK
V BLK
✱VDR
GND
+13.5V
+13.5V
GND
GND
+12V
RGB
Y
B
G
DIODE
TRANSISTER
RESISTORS : indicated:1/8W 5%
tolerance unless otherwise
noted k:k
CAPACITORS : indicated:Capacity(μF)/Voltage(V)
unless otherwise noted P:PF
indicated without Voltage is 50V
except electrolytic Capacity


B3/3
B1/3,3/3
RED
GREEN
BLUE
+12V
GND
SIGNAL ROUTE
: Y SIGNAL ROUTE
: C SIGNAL ROUTE
: VD SIGNAL ROUTE
SHARPNESS
IC2203
PAN030
EXTRGB(1:4)
IC2202
TA8759BN
Y_IN
Y_OUT

: SYNC SIGNAL ROUTE
: VD SIGNAL ROUTE
(R) : RED SIGNAL ROUTE
(G) : GREEN SIGNAL ROUTE
(B) : BLUE SIGNAL ROUTE

2/3 B-a B-b 2/3

B 3/3

CLAMP
V.BLK1_
V.BLK1
H.BLK1
H.BLK
V.EXP

V.BLK1

PULSE GENERATOR

TA8759BN

B 1/3

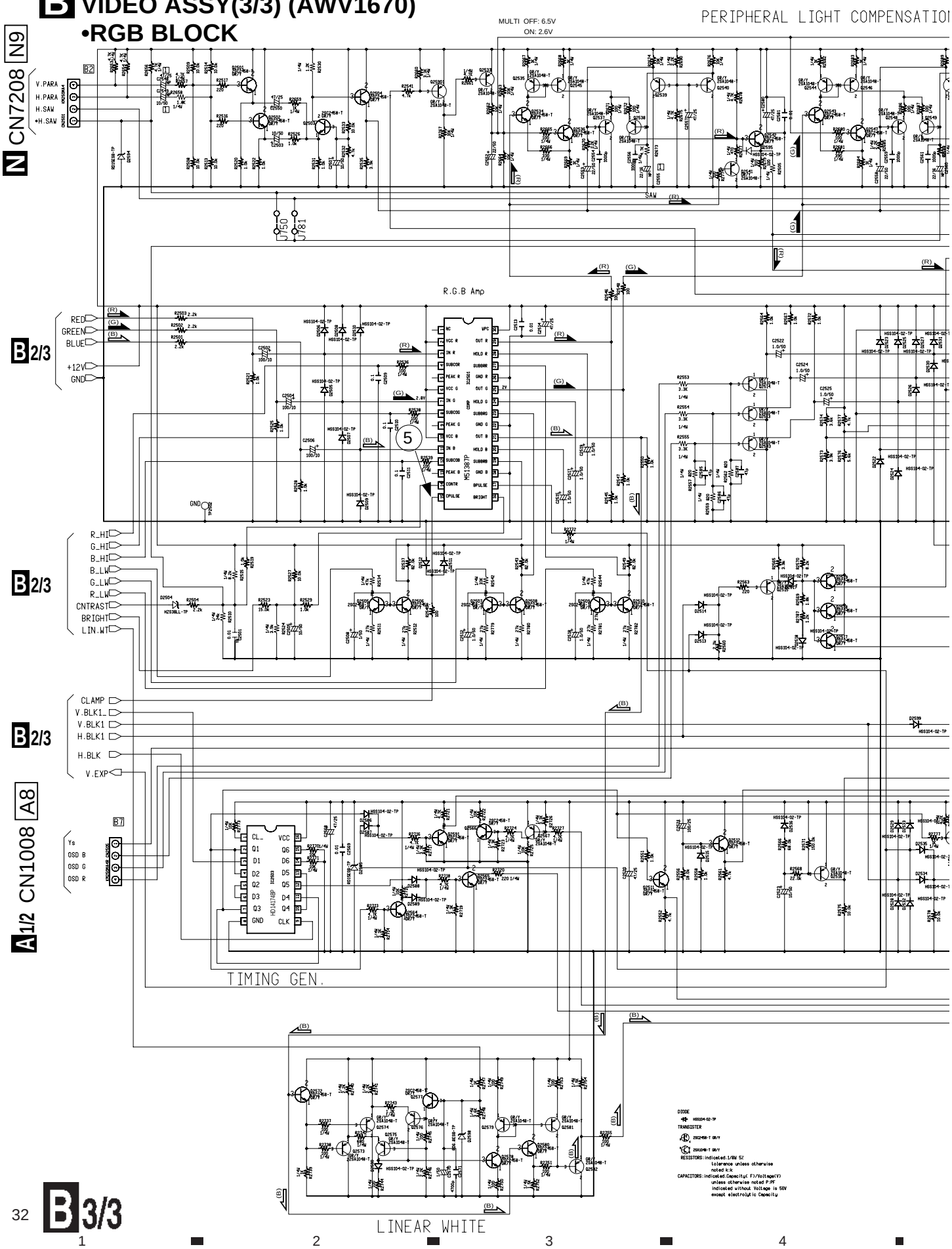
*VD
*HD

B-b 2/3 C2

CN2204 KM250MA5
V BLK
◆VDR
GND
◆HDR

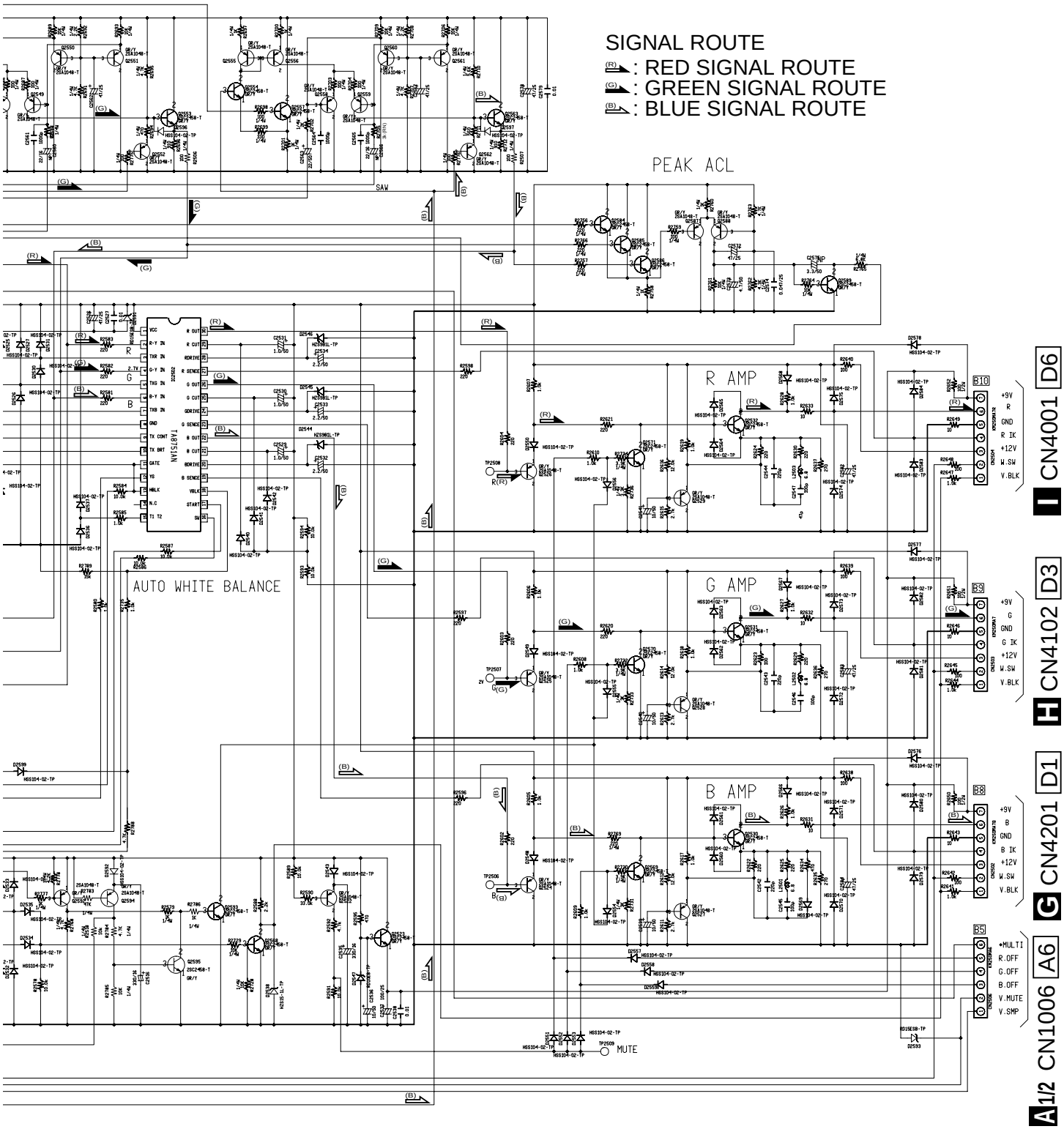
B VIDEO ASSY(3/3) (AWV1670)

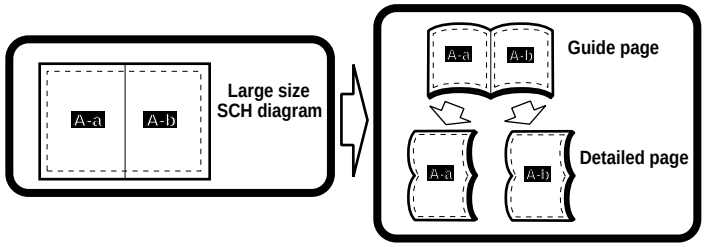
•RGB BLOCK

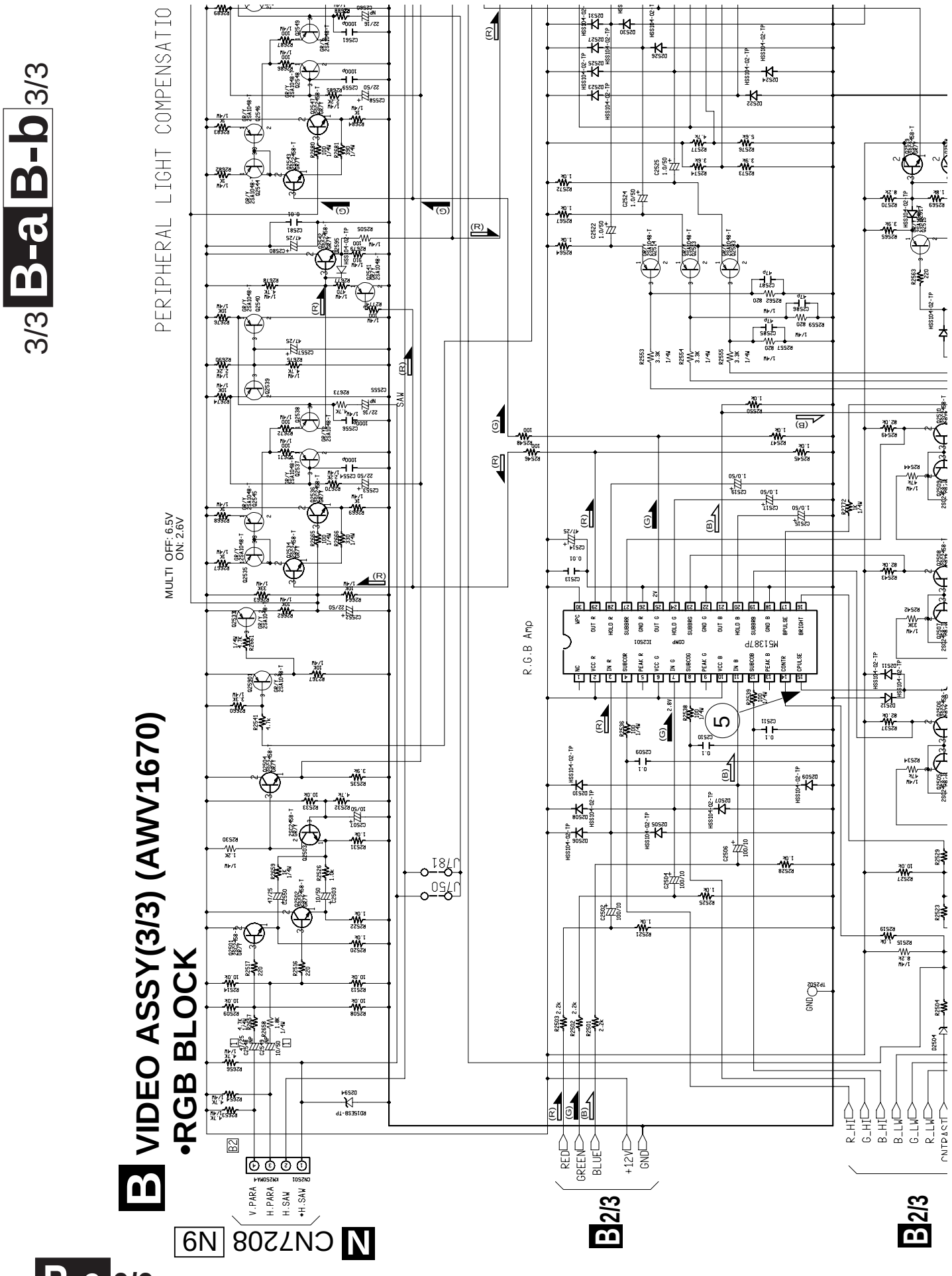


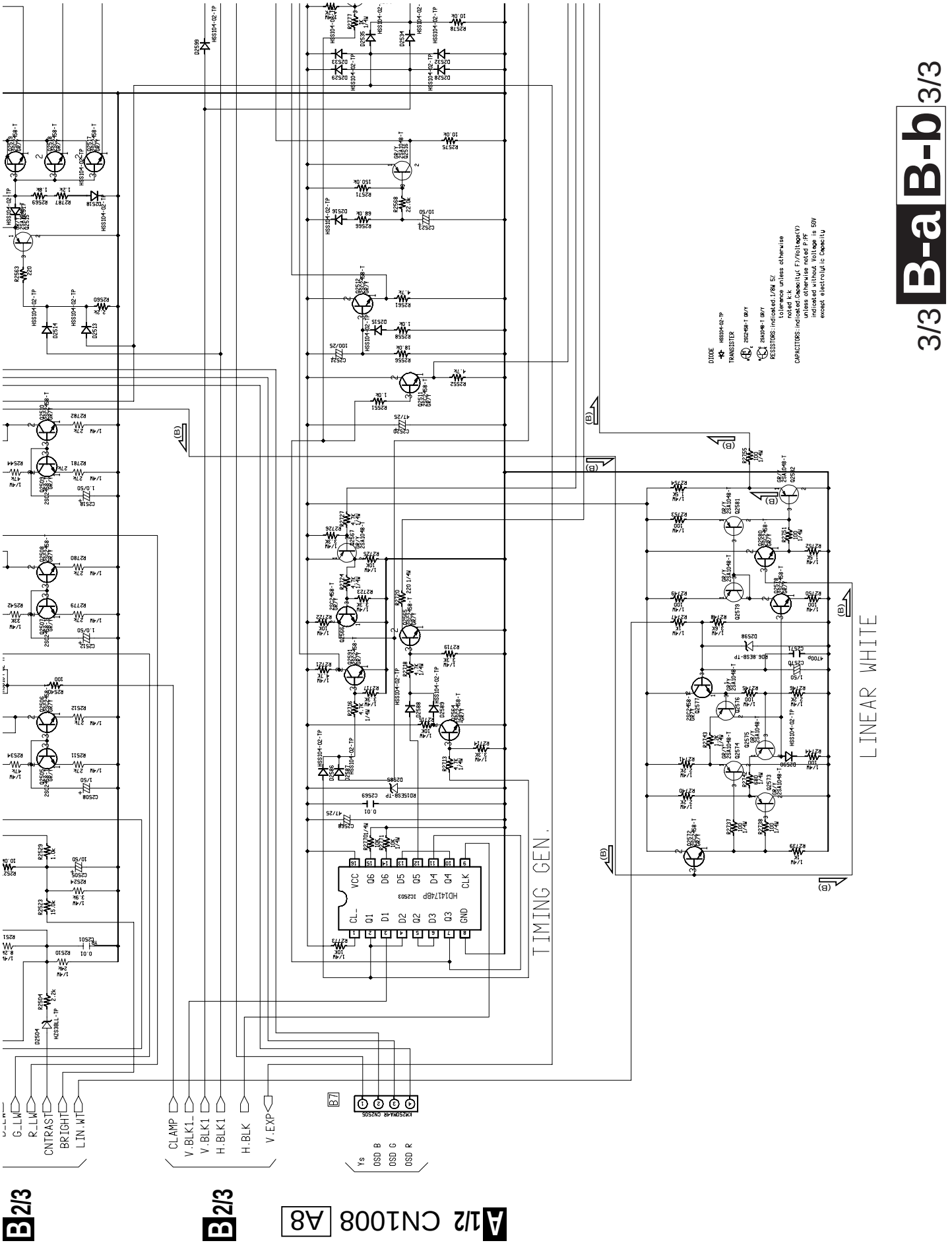
ISATION

SIGNAL ROUTE
(R): RED SIGNAL ROUTE
(G): GREEN SIGNAL ROUTE
(B): BLUE SIGNAL ROUTE

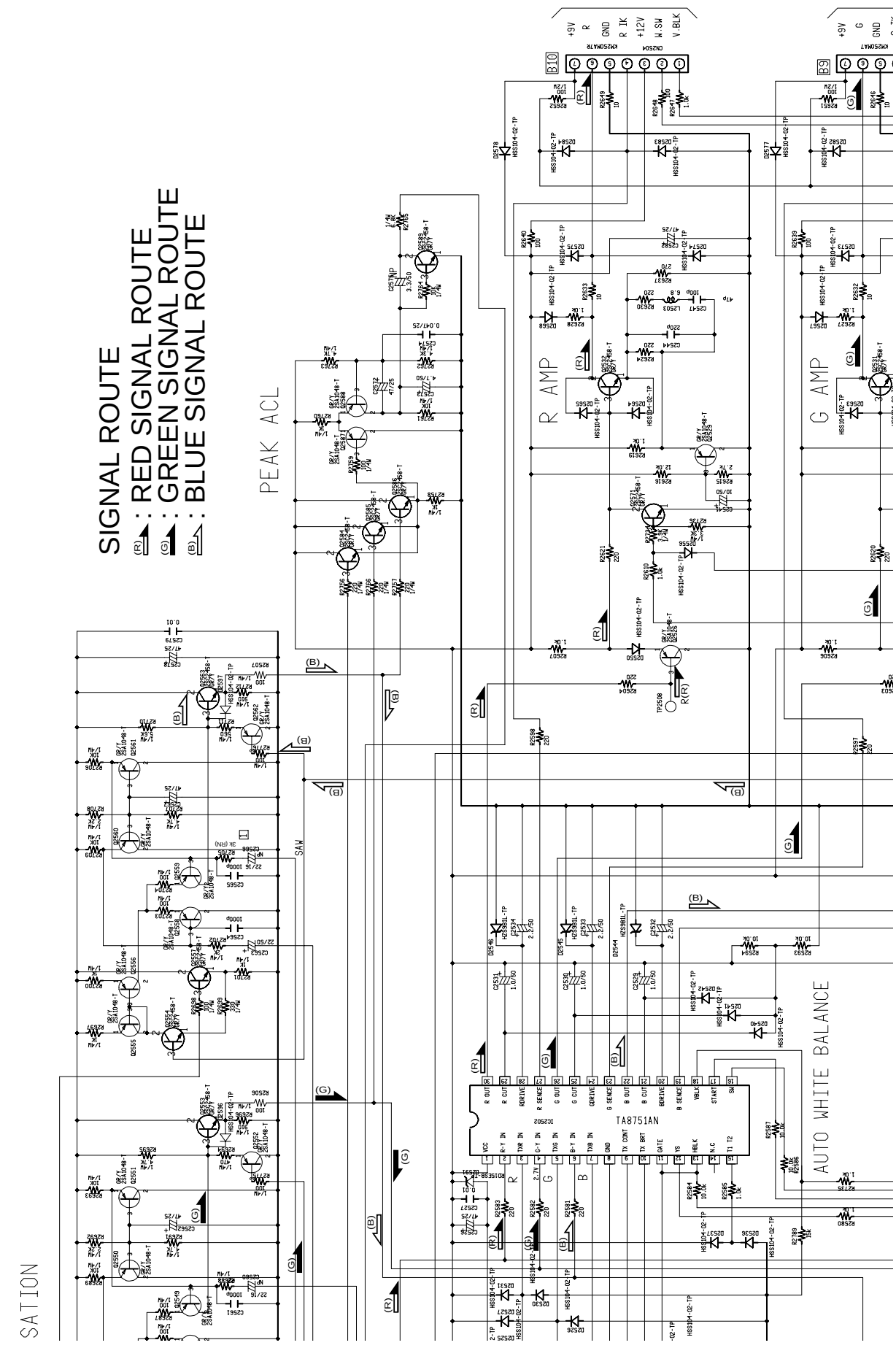




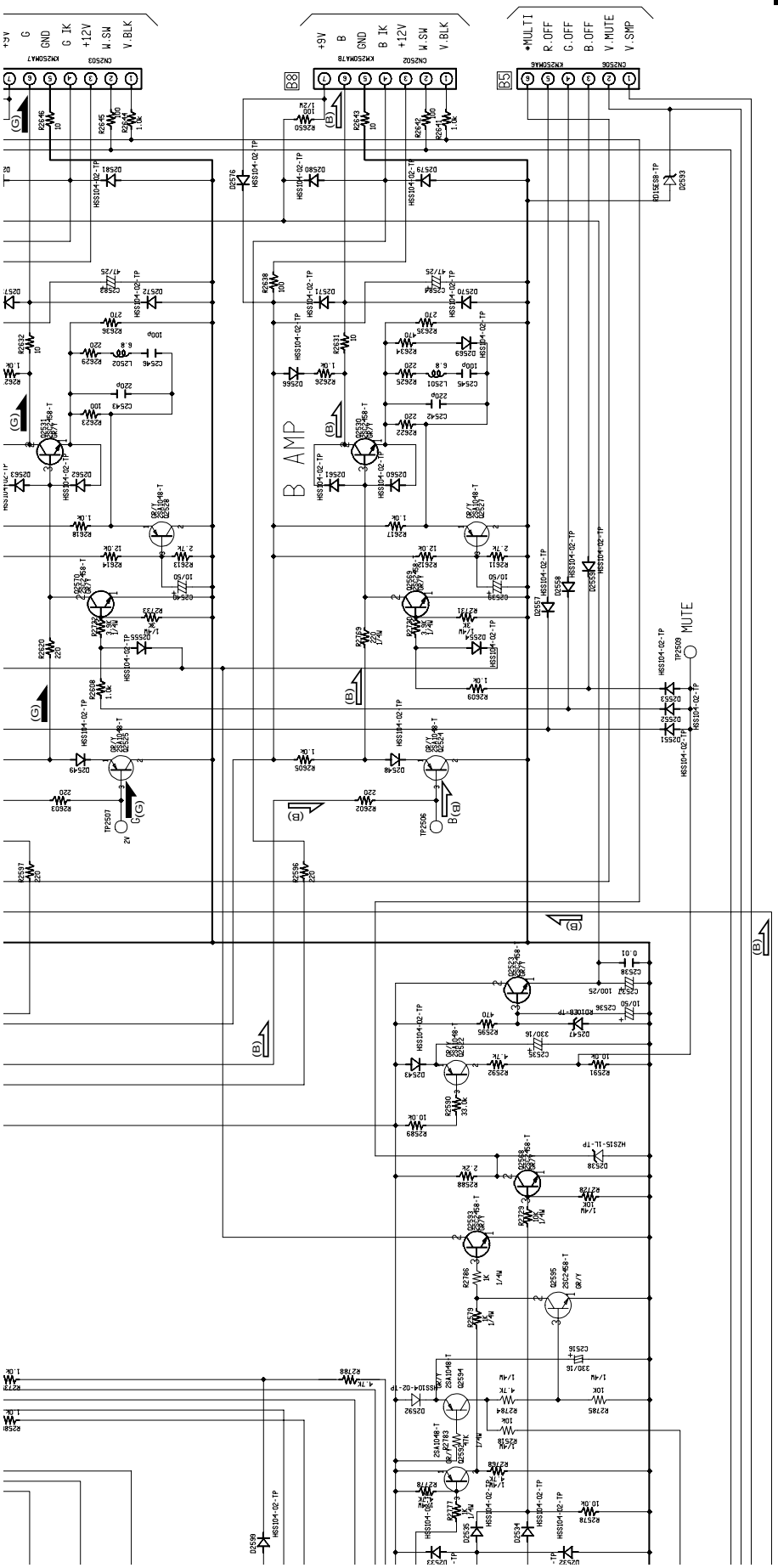

B-a B-b 3/3
3/3
B VIDEO ASSY(3/3) (AWV1670)
•RGB BLOCK
PERIPHERAL LIGHT COMPENSATIO
MULTI OFF: 6.5V
ON: 2.6V
SAW
R.G.B Amp
M51387P
B2
CN2501
CN2504
V.PARA
H.PARA
H.SAW
H.SAW
N CN7208 N9
RED
GREEN
BLUE
+12V
GND
B2/3
B2/3
R_HI
G_HI
B_HI
B_LW
G_LW
R_LW
CNTRAST


B-b 3/3
3/3 B-a
DIODE
TRANSISTER
RESISTORS:indicated.1/8W 5%
tolerance unless otherwise
noted kik
CAPACITORS:indicated.Capacitur F)/Voltage(V)
indicated without voltage
is 50V
except electrolytic Capacity
LINEAR WHITE
TIMING GEN.
HD14174BP IC2503
CL_ Q1 D1 D2 Q2 D3 Q3 GND VCC Q6 D6 D5 Q5 D4 Q4 CLK
G_LW
R_LW
CNTRAST
BRIGHT
LIN.WT
CLAMP
V.BLK1_
V.BLK1
H.BLK1
H.BLK
V.EXP
Ys
OSD B
OSD G
OSD R
B7
B2/3
B2/3
A1/2 CN1008 A8
B-a 3/3
35

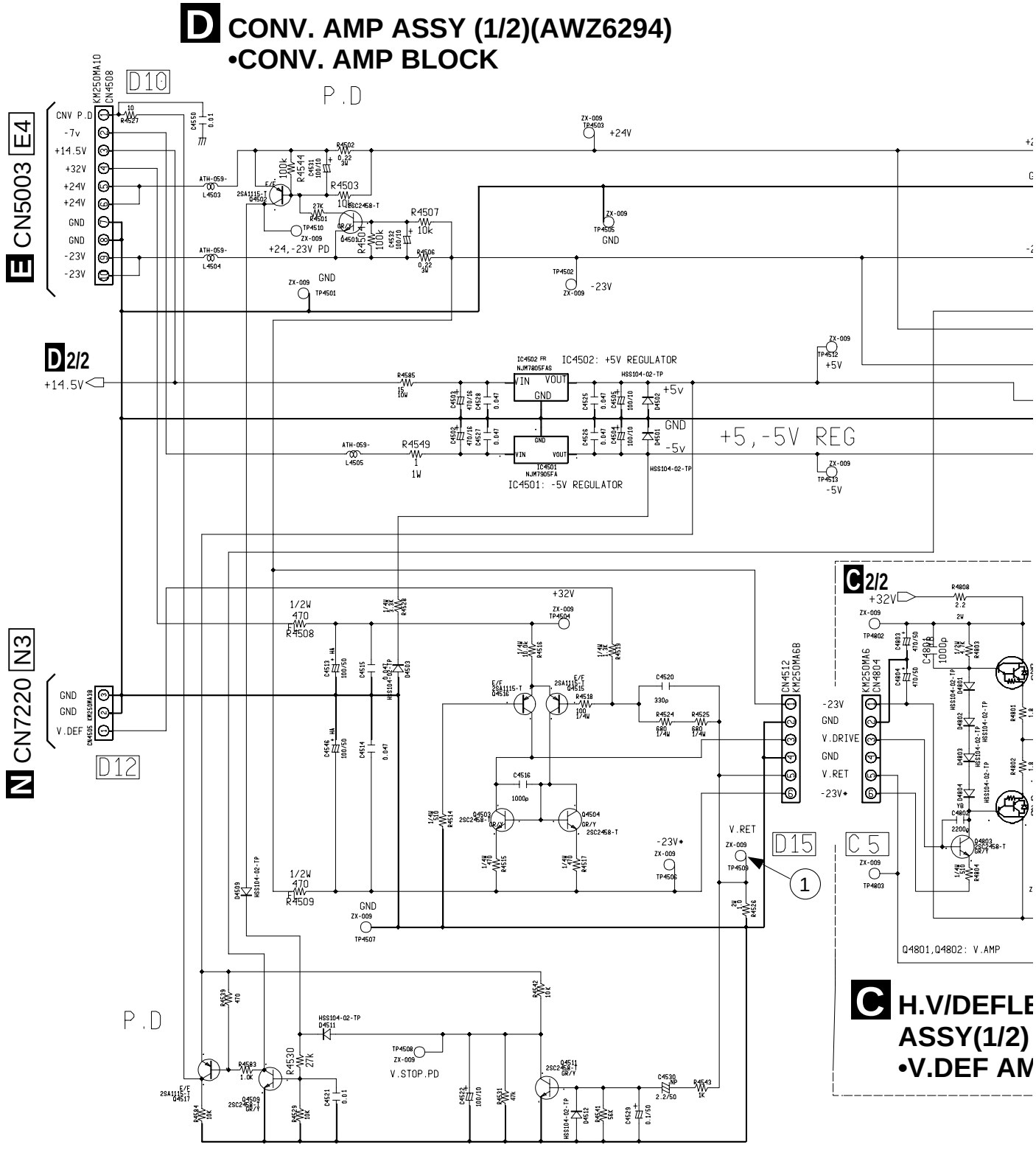
3/3 B-a B-b 3/3


SIGNAL ROUTE
(R) : RED SIGNAL ROUTE
(G) : GREEN SIGNAL ROUTE
(B) : BLUE SIGNAL ROUTE
102 D3
CN4001 D6
B10
B9
+9V
R
GND
R IK
+12V
MS.W
V.BLK
+9V
G
GND
R AMP
G AMP
PEAK ACL
SAW
AUTO WHITE BALANCE
TA8751AN
IC2502
SATION

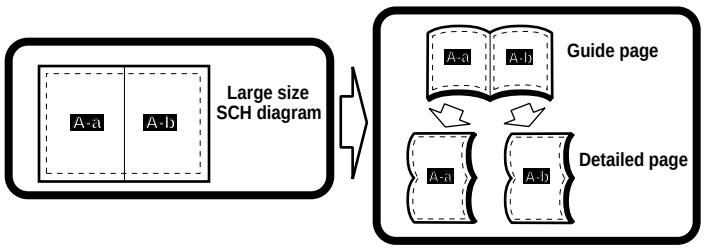
A1/2 CN1006 A6 G CN4201 D1 H CN4102

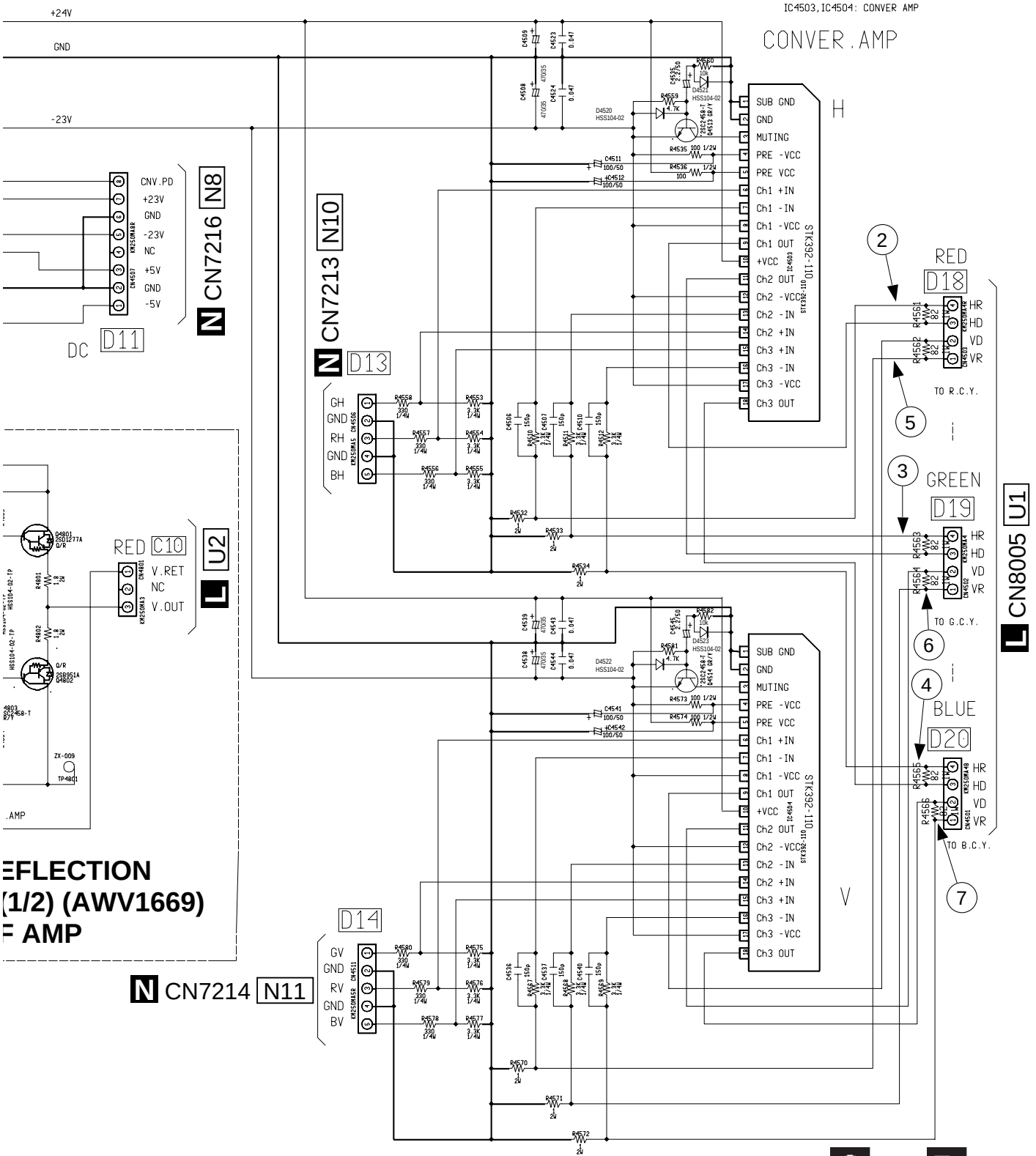


3.7 H.V/DEFLECTION ASSY(1/2)/CONV.AMP ASSY(1/2)



C-b 1/2 D-b 1/2

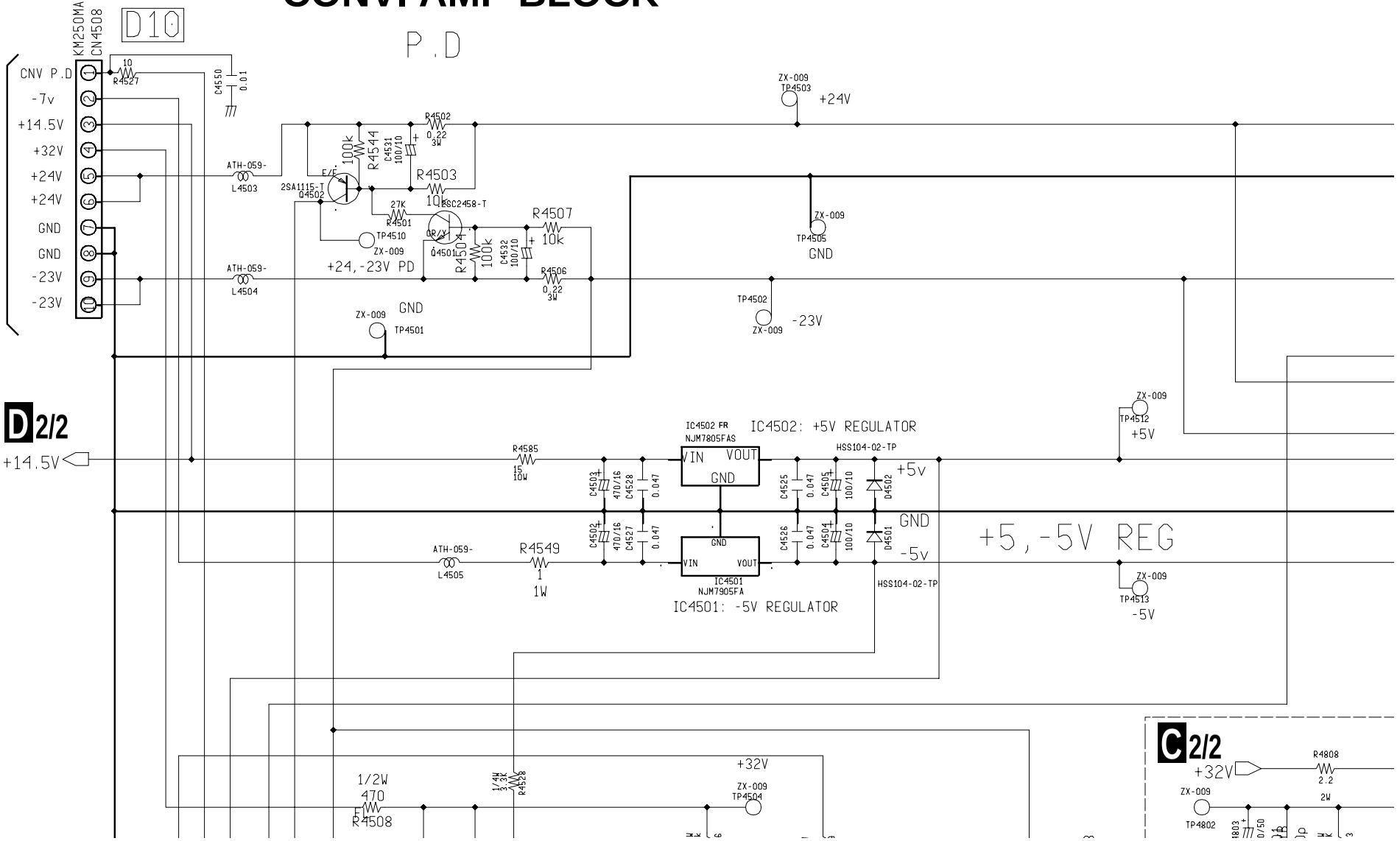

Large size SCH diagram
A-a
A-b
Guide page
Detailed page

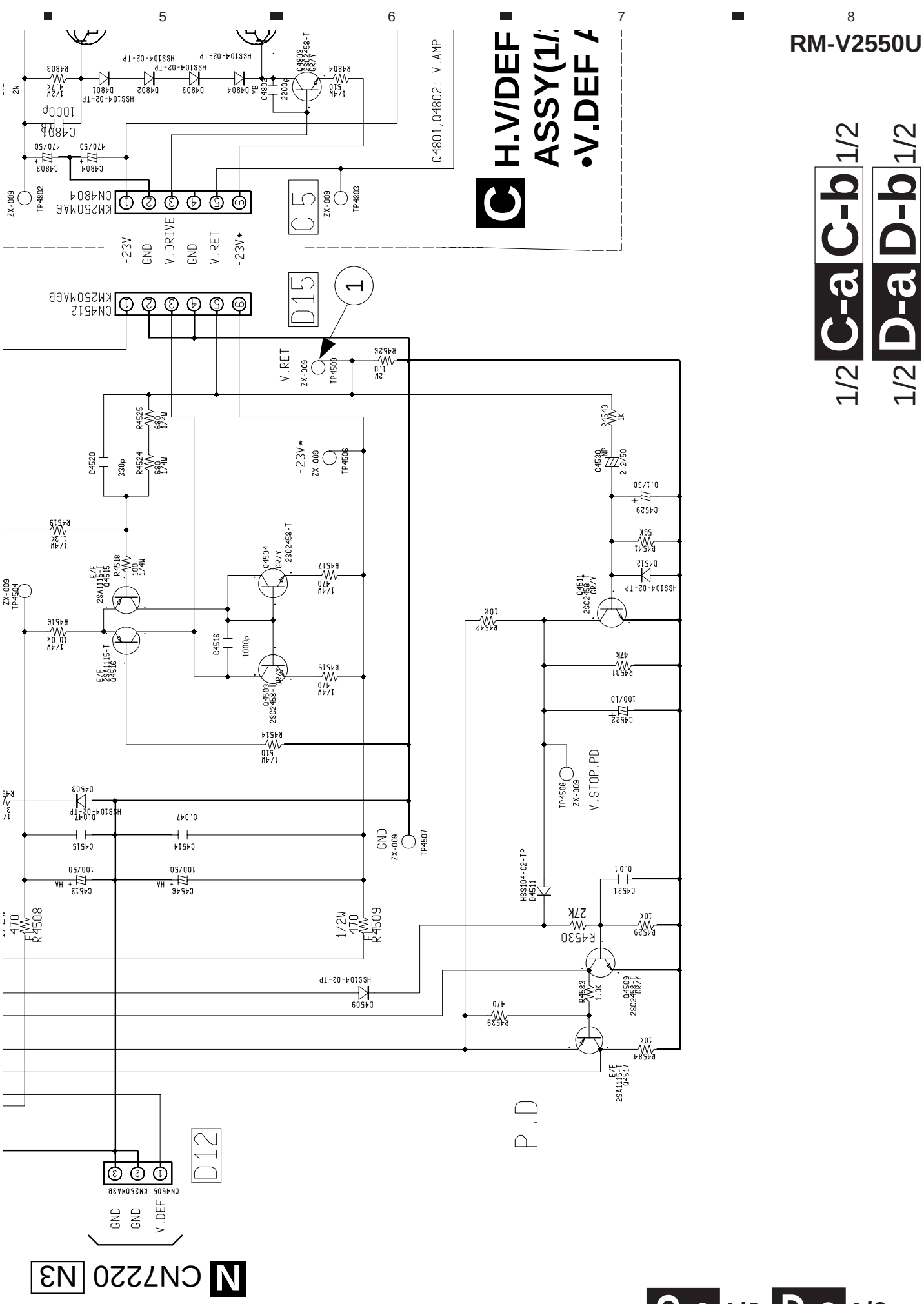

IC4503,IC4504: CONVER AMP
CONVER.AMP
+24V
GND
-23V
CNV.PD
+23V
GND
-23V
NC
+5V
GND
-5V
CN7216 N8
DC D11
CN7213 N10
D13
GH
GND
RH
GND
BH
SUB GND
GND
MUTING
PRE -VCC
PRE VCC
Ch1 +IN
Ch1 -IN
Ch1 -VCC
Ch1 OUT
+VCC
Ch2 OUT
Ch2 -VCC
Ch2 -IN
Ch2 +IN
Ch3 +IN
Ch3 -IN
Ch3 -VCC
Ch3 OUT
STK392-110
H
V
RED D18
GREEN D19
BLUE D20
HR
HD
VD
VR
TO R.C.Y.
TO G.C.Y.
TO B.C.Y.
CN8005 U1
RED C10
V.RET
NC
V.OUT
U2
D14
GV
GND
RV
GND
BV
CN7214 N11
EFLECTION
(1/2) (AWV1669)
F AMP

1/2 C-a C-b 1/2
1/2 D-a D-b 1/2

D CONV. AMP ASSY (1/2)(AWZ6294)

•CONV. AMP BLOCK

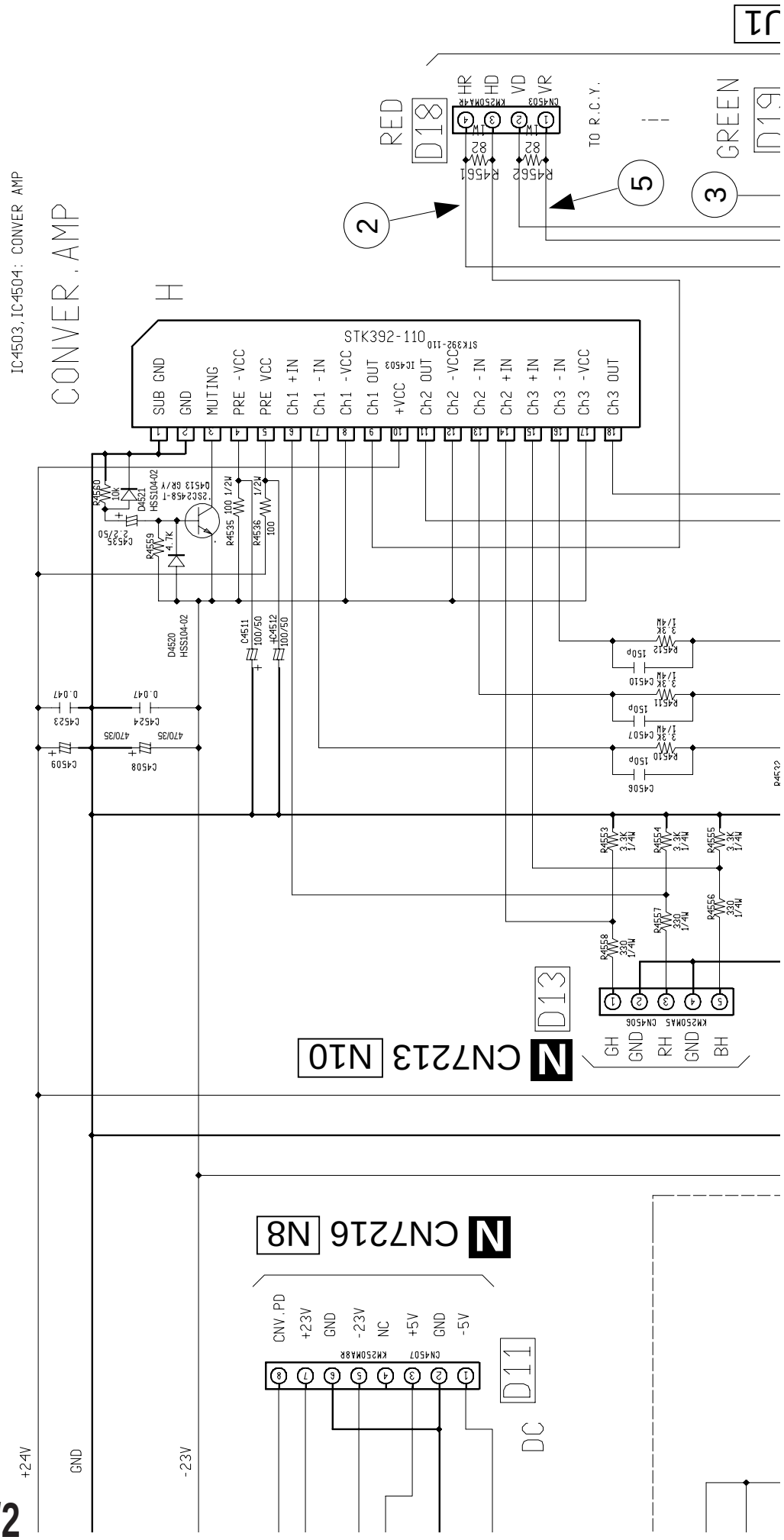




1/2 C-a C-b 1/2

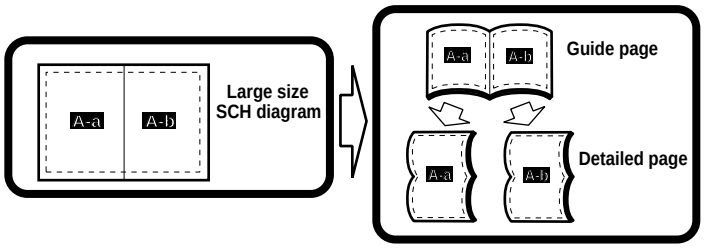
1/2 D-a D-b 1/2

C-a 1/2 C-b 1/2
D-a 1/2 D-b 1/2



CN8005 U1
D19
D20
HR
HD
VD
VR
TO G.C.Y.
TO B.C.Y.
GREEN
BLUE
6
4
7
STK392-110
SUB GND
GND
MUTING
PRE - VCC
PRE VCC
Ch1 +IN
Ch1 -IN
Ch1 -VCC
Ch1 OUT
+VCC
Ch2 OUT
Ch2 -VCC
Ch2 -IN
Ch2 +IN
Ch3 +IN
Ch3 -IN
Ch3 -VCC
Ch3 OUT
IC4504
D4522 HSS104-02
D4523 HSS104-02
2SC2458-T
D4514 BR/Y/G
C4541 100/50
C4542 100/50
R4534 2W
R4533 2W
R4532 1 2W
R4572 2W
R4571 2W
R4570 1 2W
R4575 3.3K 1/4W
R4576 3.3K 1/4W
R4577 3.3K 1/4W
R4579 330 1/4W
R4578 330 1/4W
R4580 330 1/4W
D14
GV
GND
RV
GND
BV
N11
CN7214
U2
C10
V.RET
NC
V.OUT
RED
FLECTION
L/2) (AWV1669)
AMP
C-b 1/2 D-b 1/2
C-a C-b 1/2 1/2 D-a D-b 1/2
A
B
C
D

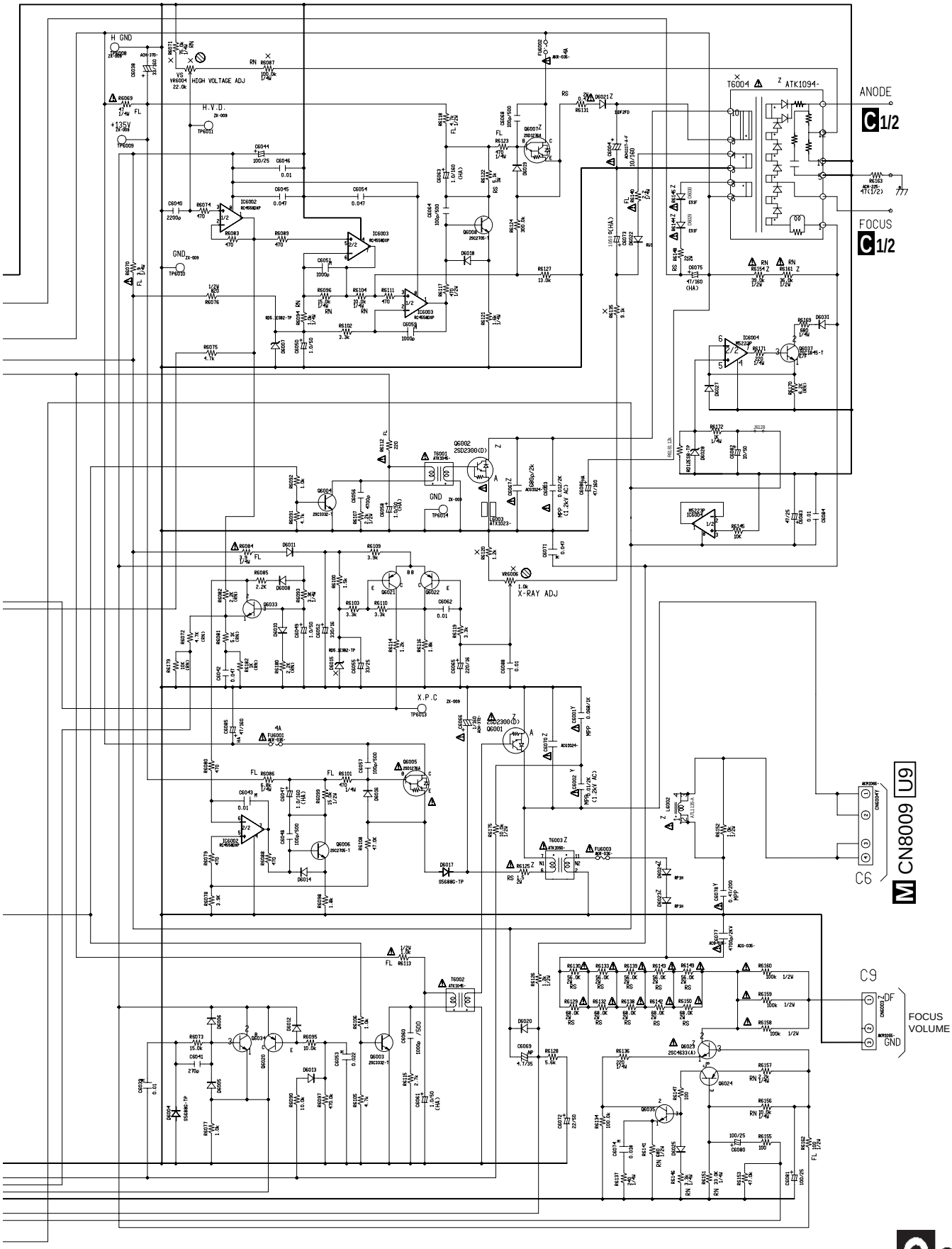
3.8 H.V/DEFLECTION ASSY(2/2)



C H.V/DEFLECTION ASSY(2/2) (AWV1669)

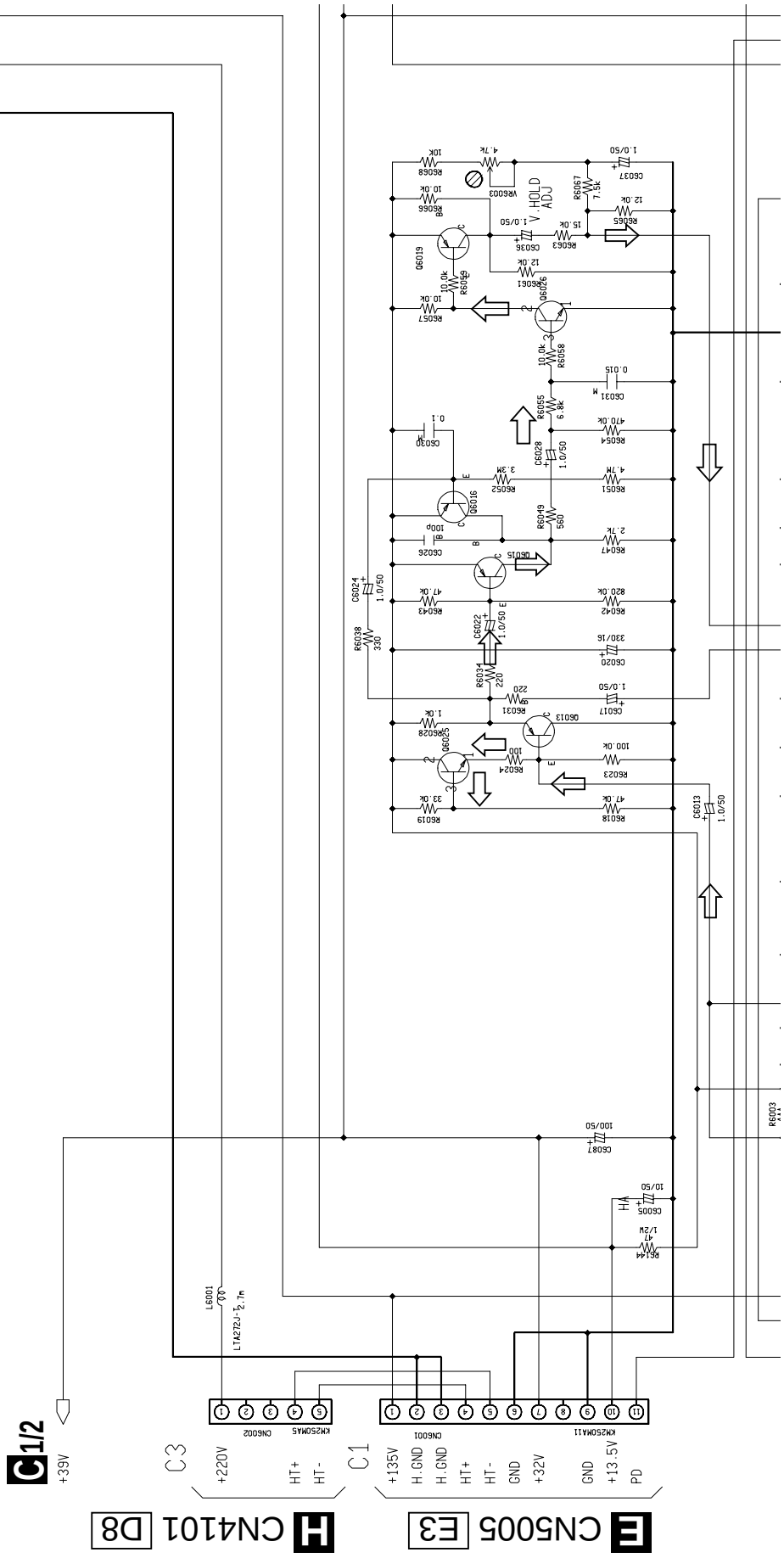
•H.V/DEFLECTION BLOCK

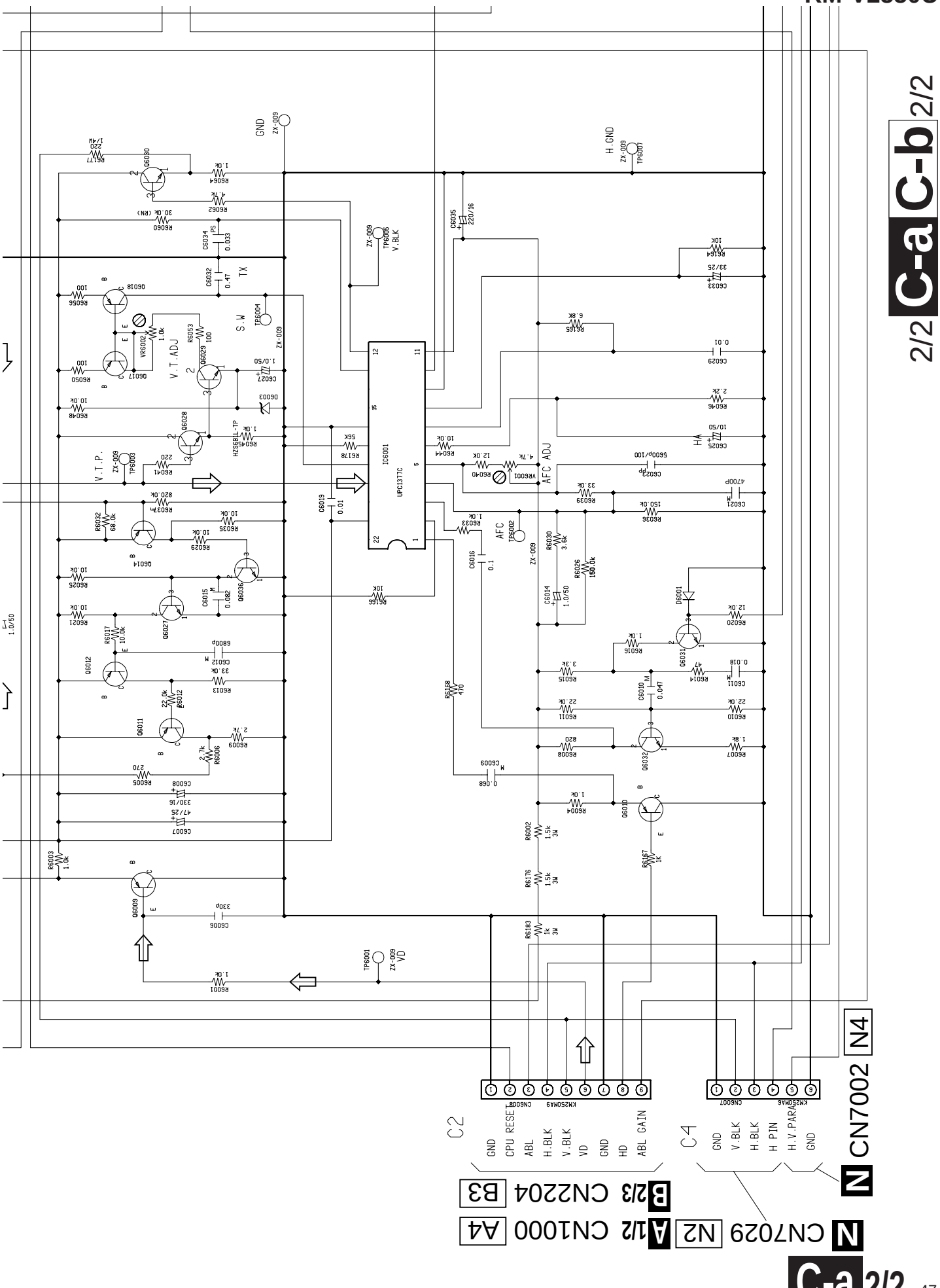
⇨: VD Signal Route



C H.V/DEFLECTION ASSY(2/2) (AWV1669)

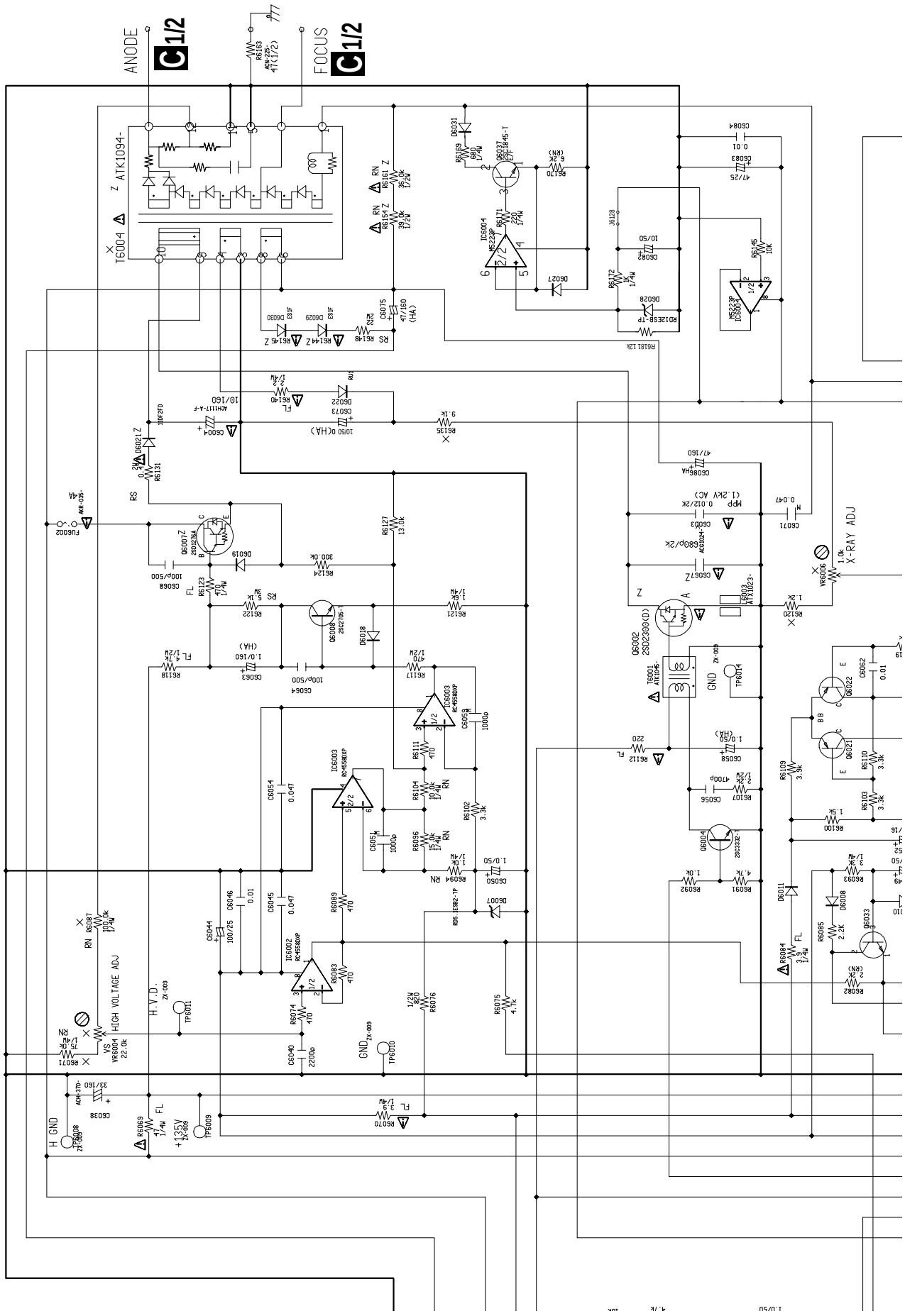
•H.V/DEFLECTION BLOCK

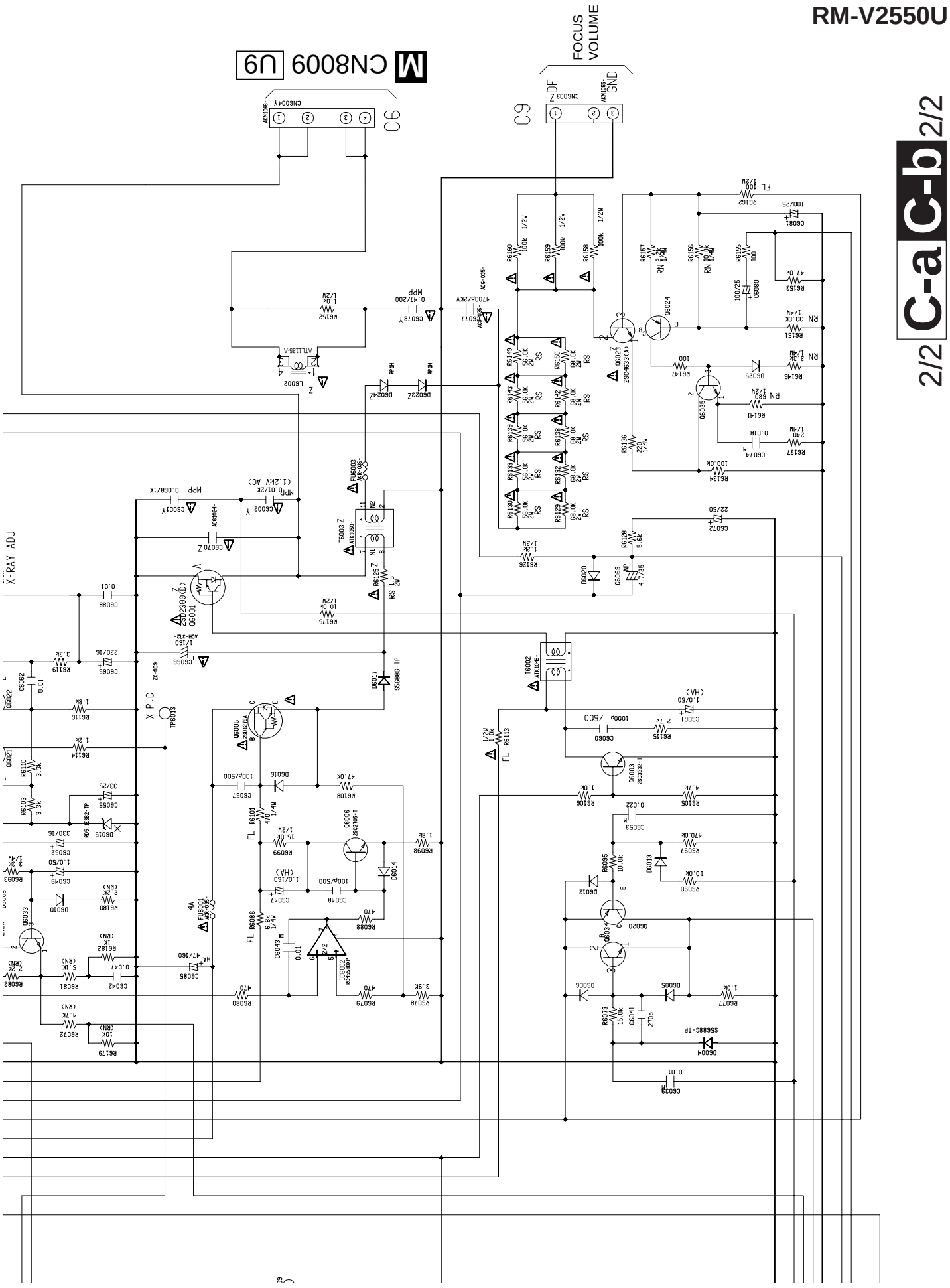



C-a 2/2
C-b 2/2
2/2
GND
H.GND
V.T.ADJ
S.W
TX
V.T.P.
AFC
AFC ADJ
V.BLK
IC6001
UPC1377C
C2
GND
CPU RESET
ABL
H.BLK
V.BLK
VD
GND
HD
ABL GAIN
C4
GND
V.BLK
H.BLK
H PIN
H.V.PARA
GND
N CN7002 N4
N CN7029 N2
A1/2 CN1000 A4
B2/3 CN2204 B3

2/2 C-a C-b 2/2

⇧: VD Signal Route

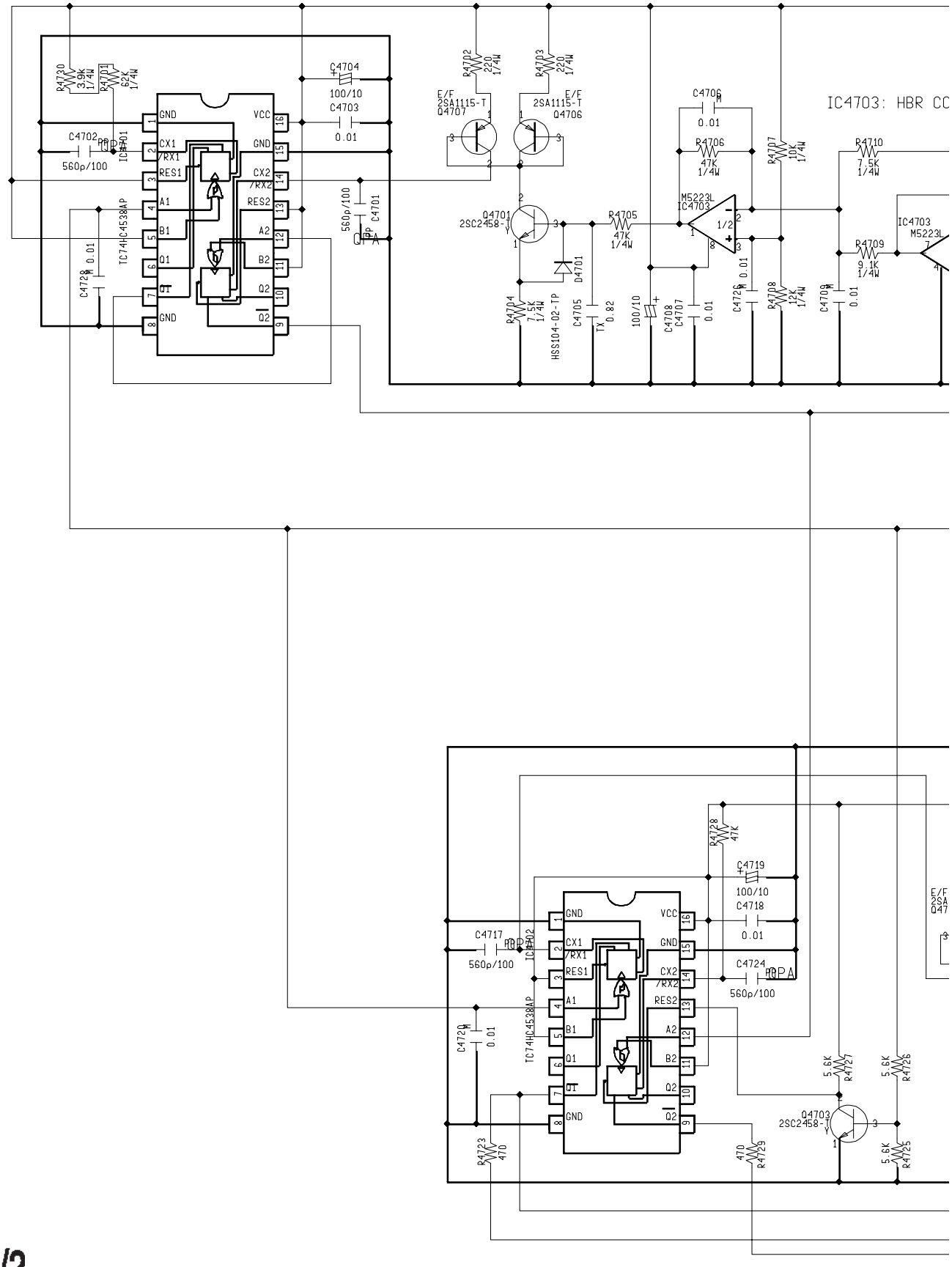


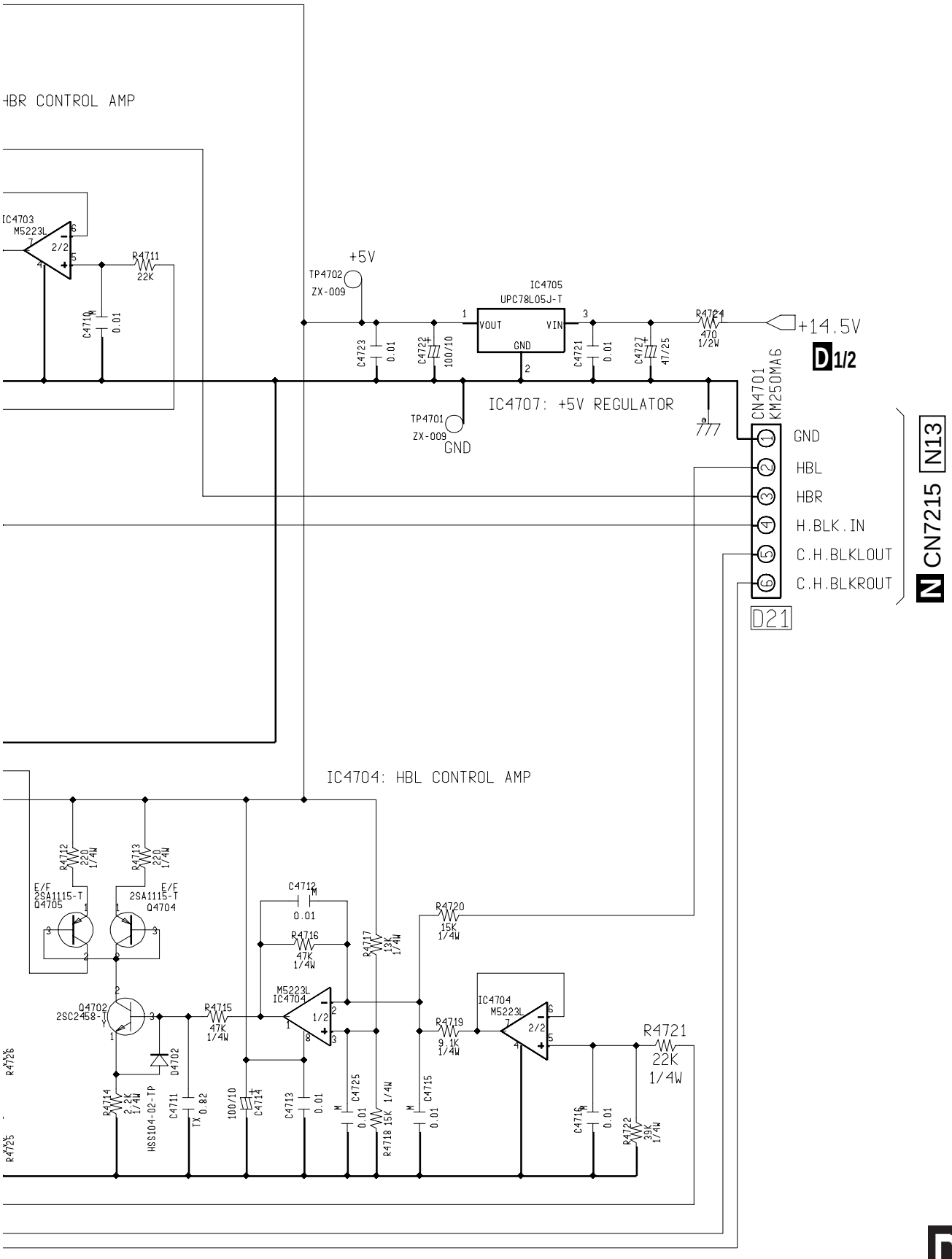

M CN8009 U9
FOCUS
VOLUME
C9
CN6003 Z
GND
C6
CN6004 Y
X-RAY ADJ
X.P.C
TP6013
Z
Y
A
B
C
D
2/2 C-a C-b 2/2

3.9 CONV.AMP ASSY(2/2)

D CONV.AMP ASSY (2/2)(AWZ6294)

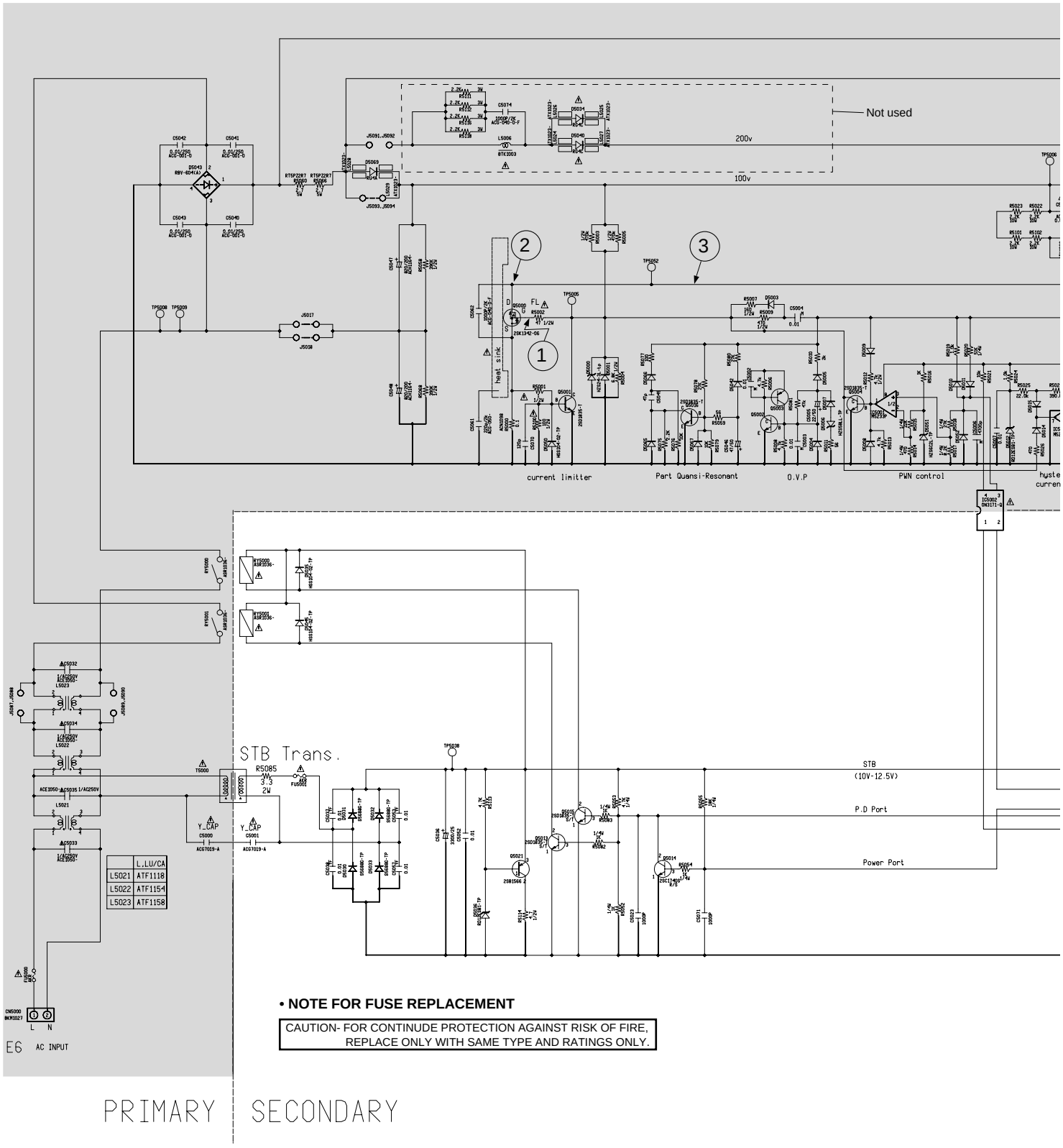
•CONVER SUB BLOCK




HBR CONTROL AMP
IC4703
M5223L
2/2
R4711
22K
C4710
0.01
+5V
TP4702
ZX-009
IC4705
UPC78L05J-T
VOUT
VIN
GND
C4723
0.01
C4722
100/10
C4721
0.01
C4727
47/25
R4724
470
1/2W
+14.5V
D1/2
IC4707: +5V REGULATOR
TP4701
ZX-009
GND
CN4701
KM250MA6
GND
HBL
HBR
H.BLK.IN
C.H.BLKLOUT
C.H.BLKROUT
D21
CN7215
N13
IC4704: HBL CONTROL AMP
R4712
220
1/4W
R4713
220
1/4W
E/F
2SA1115-T
Q4705
E/F
2SA1115-T
Q4704
C4712
0.01
R4716
47K
1/4W
R4717
13K
1/4W
R4720
15K
1/4W
Q4702
2SC2458-T
R4715
47K
1/4W
M5223L
IC4704
1/2
R4719
9.1K
1/4W
IC4704
M5223L
2/2
R4721
22K
1/4W
R4714
2.2K
1/4W
HSS104-02-TP
C4711
0.82
D4702
100/10
C4714
C4713
0.01
C4725
0.01
R4718 15K 1/4W
C4715
0.01
C4716
0.01
R4722
39K
1/4W

3.10 POWER SUPPLY ASSY

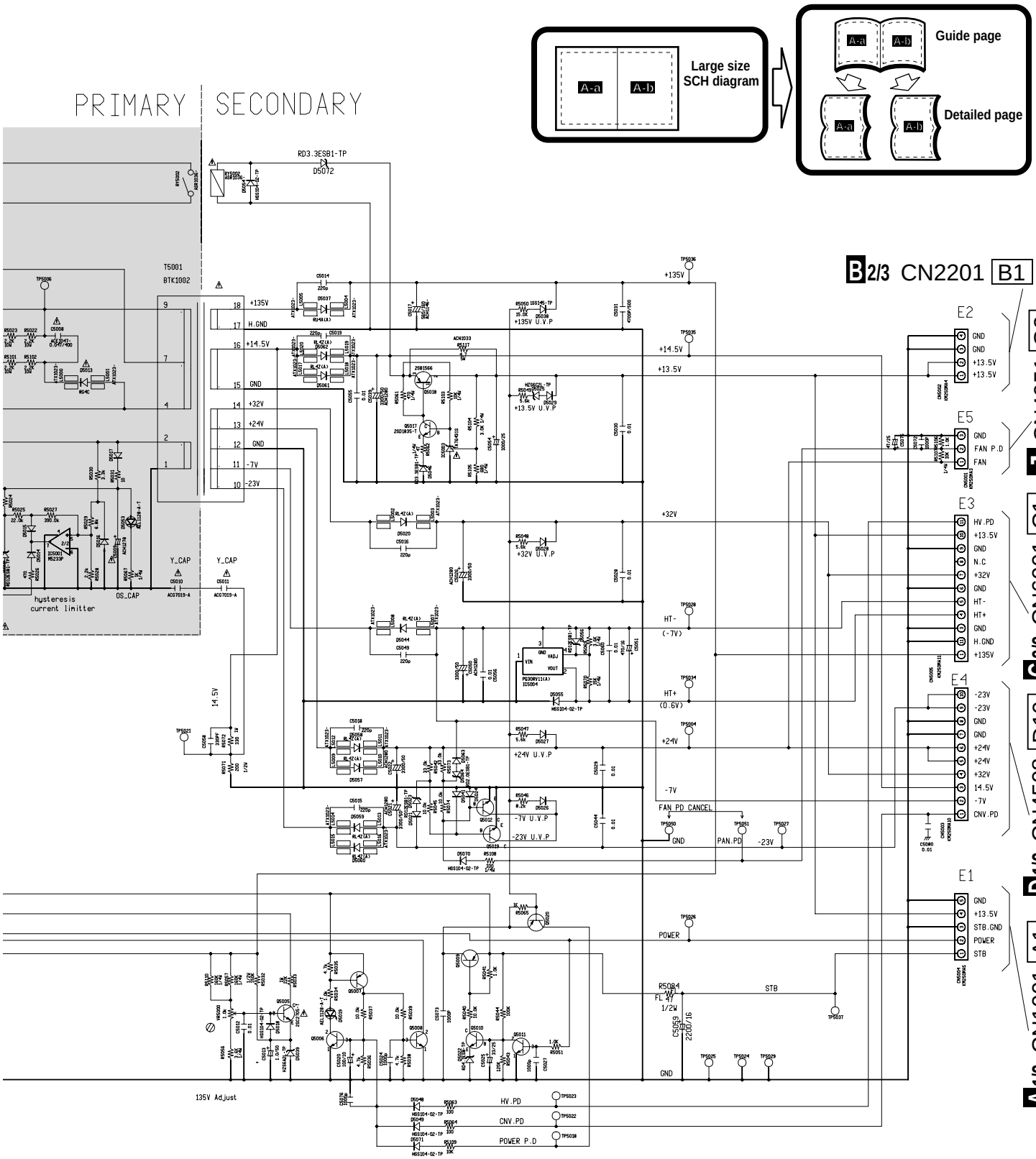
E POWER SUPPLY ASSY (BWV1044)



	L.LU/CA
L5021	ATF1118
L5022	ATF1154
L5023	ATF1158

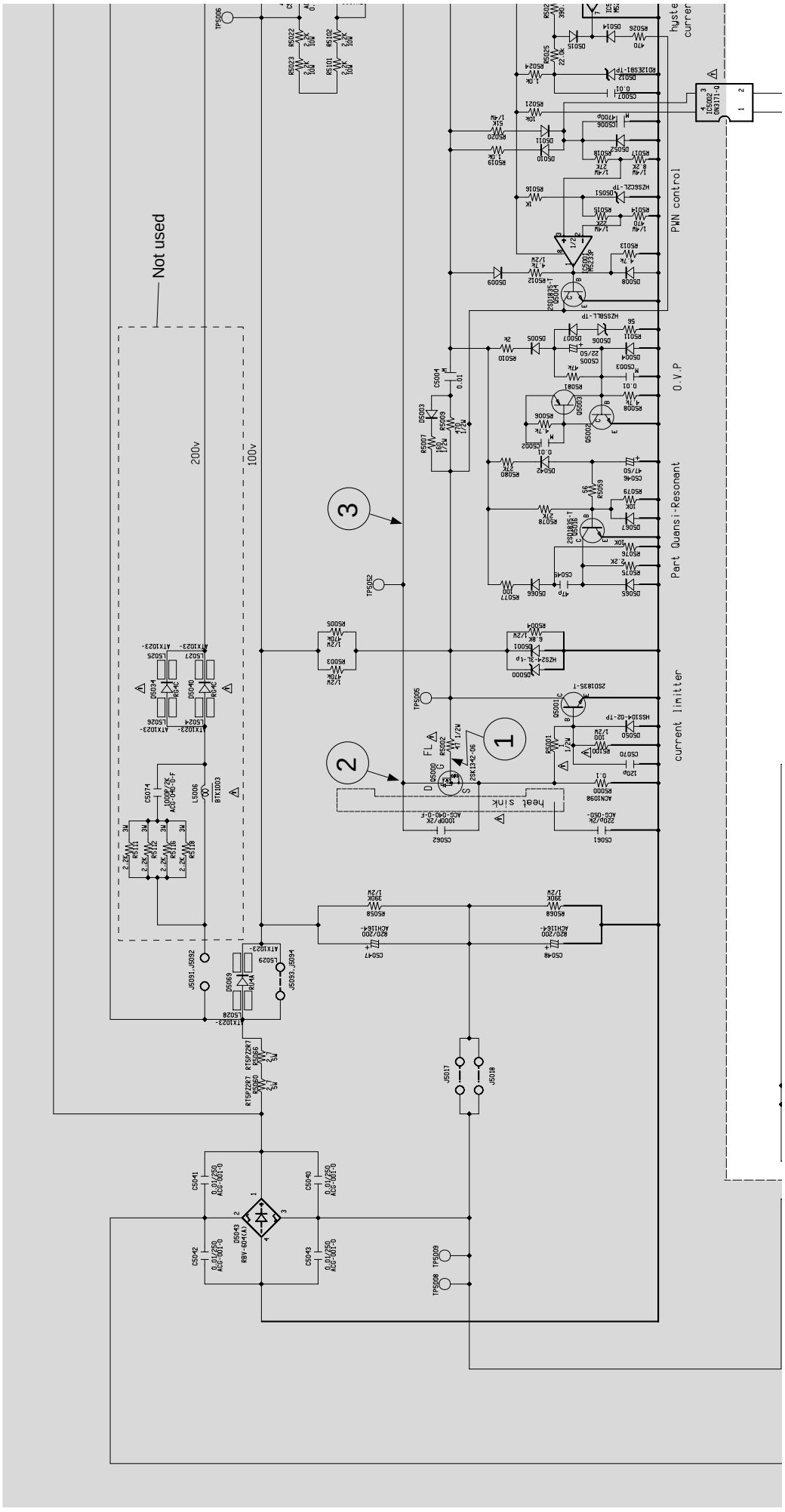
• **NOTE FOR FUSE REPLACEMENT**

CAUTION- FOR CONTINUDE PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.

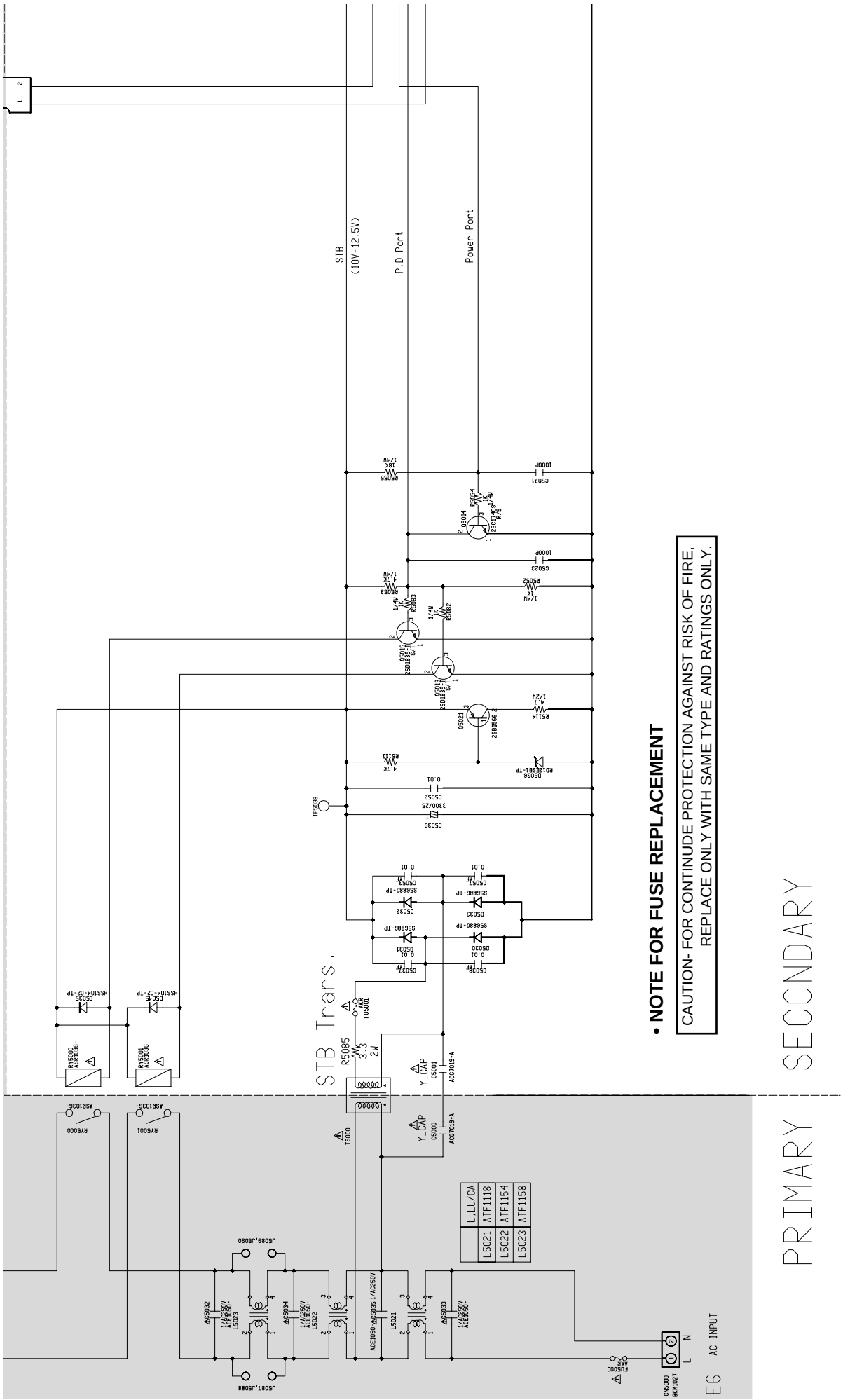

Large size SCH diagram
A-a
A-b
Guide page
Detailed page
PRIMARY
SECONDARY
T5001
BTK1002
RD3.3ESB1-TP
D5072
+135V
H.GND
+14.5V
GND
+32V
+24V
-7V
-23V
Y_CAP
OS_CAP
hysteresis current limitter
14.5V
135V Adjust
HV.PD
CNV.PD
POWER P.D
FAN_PD_CANCEL
PAN.PD
POWER
STB
B 2/3 CN2201 B1
E2
GND
GND
+13.5V
+13.5V
G3
CN4951
J
E5
GND
FAN P.D
FAN
E3
HV.PD
+13.5V
GND
N.C
+32V
GND
HT-
HT+
GND
H.GND
+135V
C1
CN6001
C 2/2
E4
-23V
-23V
GND
GND
+24V
+24V
+32V
14.5V
-7V
CNV.PD
D10
CN4508
D 1/2
E1
GND
+13.5V
STB.GND
POWER
STB
A1
CN1001
A 1/2

E-a E-b

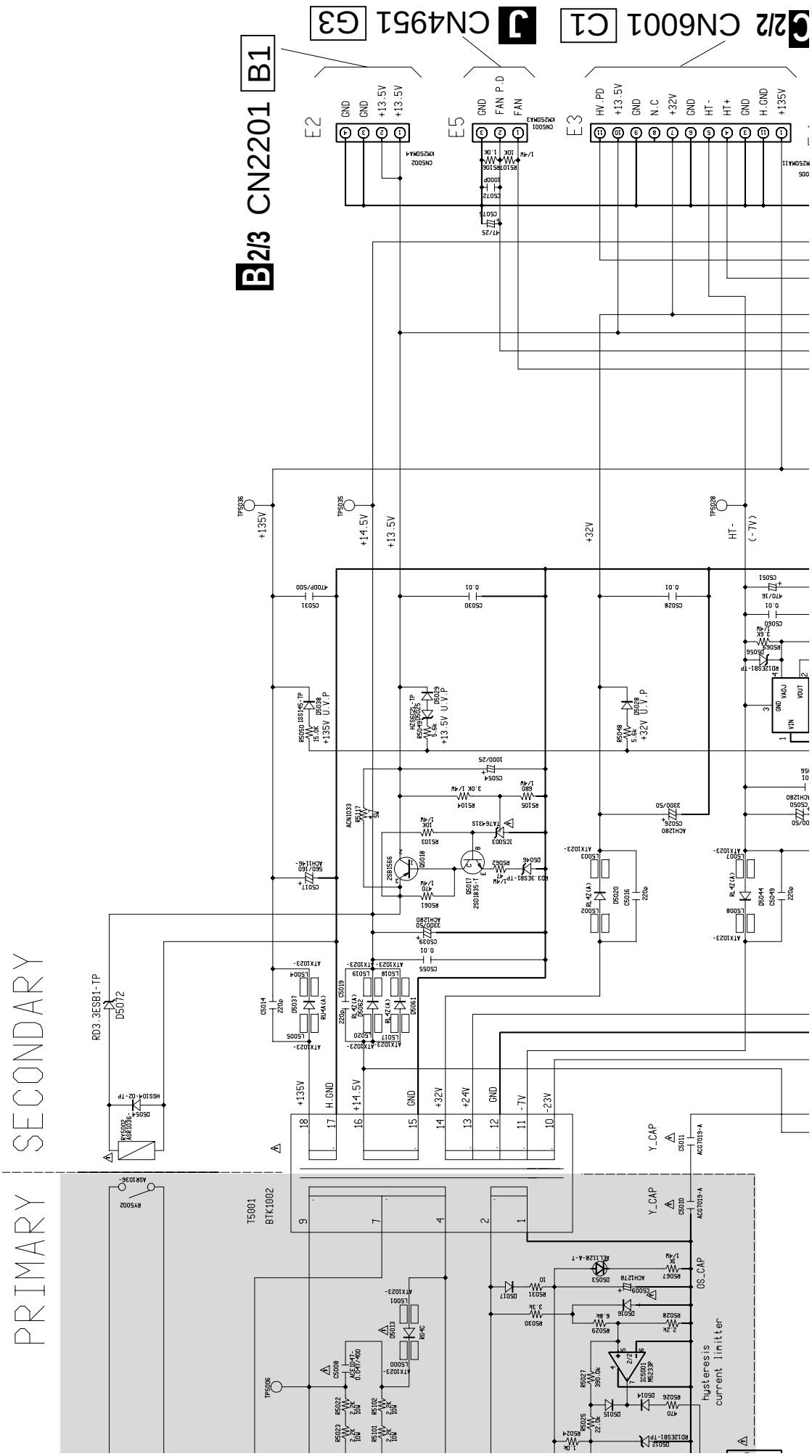
E POWER SUPPLY ASSY (BWV1044)

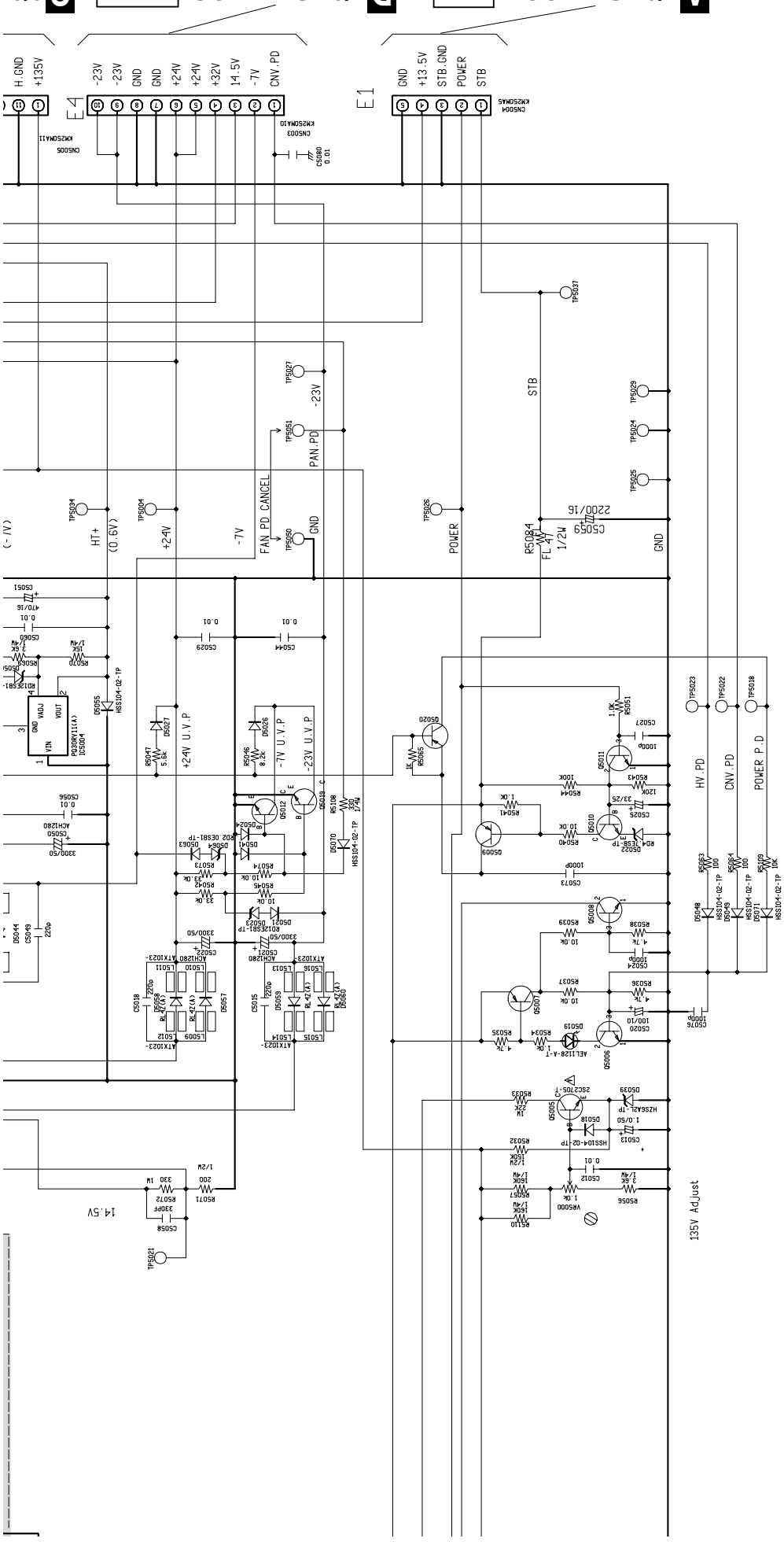


E-a E-b


STB
(10V-12.5V)
P.D Port
Power Port
PRIMARY
SECONDARY
STB Trans.
AC INPUT
• NOTE FOR FUSE REPLACEMENT
CAUTION- FOR CONTINUDE PROTECTION AGAINST RISK OF FIRE,
REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.
L.LU/CA
L5021 ATF1118
L5022 ATF1154
L5023 ATF1158

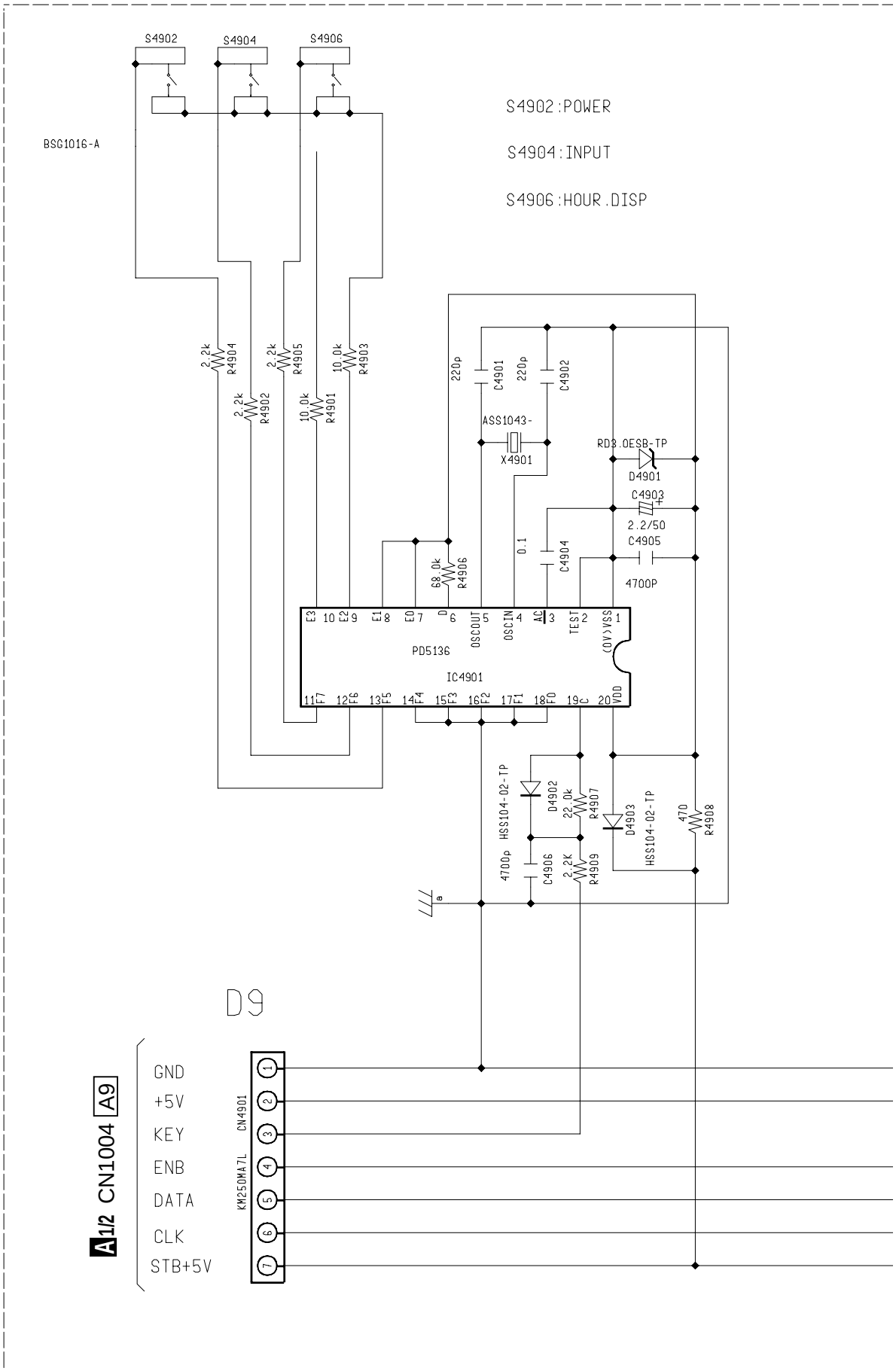
E-a E-b

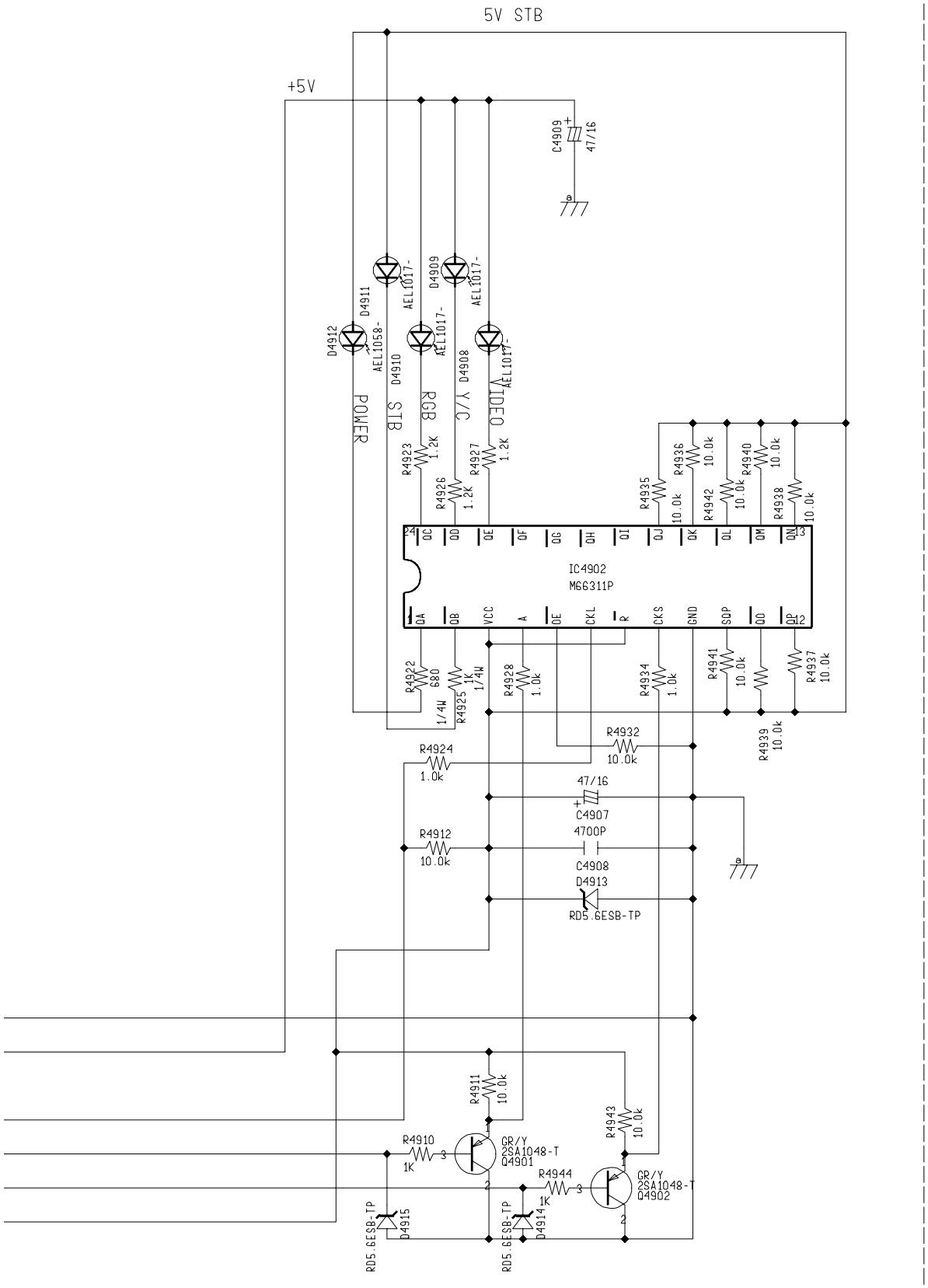

B2/3 CN2201 B1
C2/2 CN6001 C1
J CN4951 G3
PRIMARY SECONDARY
+135V
+14.5V
+13.5V
+32V
HT-
H.GND
GND
+24V
-7V
-23V
Y_CAP
OS_CAP
hysteresis current limitter


A1/2 CN1001 A1
D1/2 CN4508 D10
C2/2
H.GND
+135V
-23V
-23V
GND
GND
+24V
+24V
+32V
14.5V
-7V
CNV.PD
GND
+13.5V
STB.GND
POWER
STB
STB
-23V
PAN.PD
HT+
(0.6V)
+24V
-7V
FAN_PD_CANCEL
GND
POWER
GND
HV.PD
CNV.PD
POWER P.D
+24V U.V.P
-7V U.V.P
-23V U.V.P
14.5V
135V Adjust

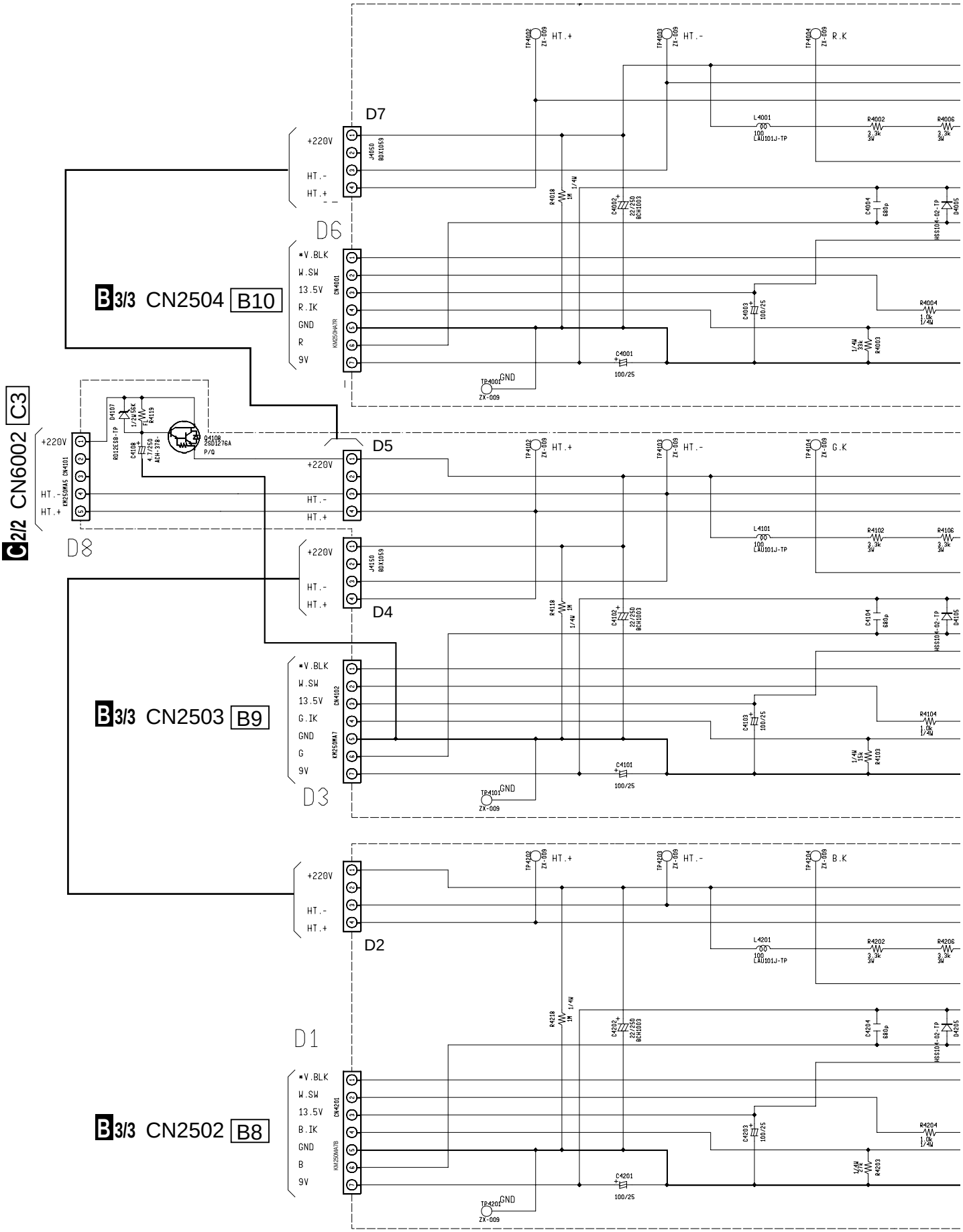
3.11 REAR LED ASSY

F REAR LED ASSY (AWZ6284)

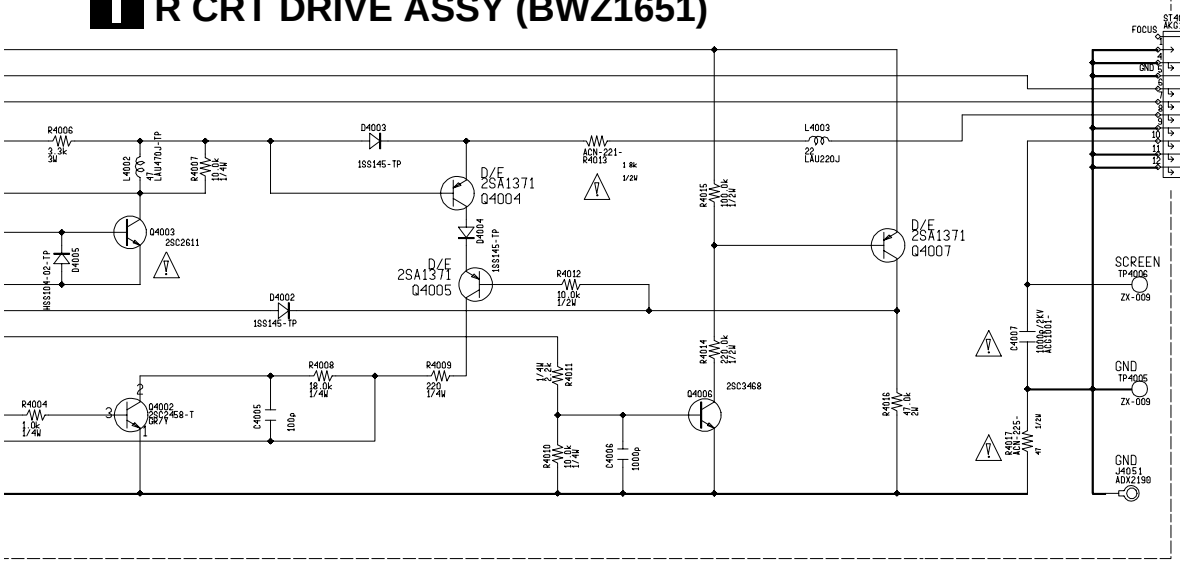



5V STB
+5V
C4909
47/16
D4911
AEL1017-
D4909
AEL1017-
D4912
AEL1058-
D4910
AEL1017-
D4908
AEL1017-
POWER
STB
RCB
Y/C
VIDEO
R4923
1.2k
R4926
1.2k
R4927
1.2k
R4935
10.0k
R4936
10.0k
R4942
10.0k
R4940
10.0k
R4938
10.0k
IC4902
M66311P
R4922
680
1/4W
R4925
1K
1/4W
R4928
1.0k
R4934
1.0k
R4941
10.0k
R4937
10.0k
R4939
10.0k
R4932
10.0k
R4924
1.0k
47/16
C4907
4700P
C4908
R4912
10.0k
D4913
RD5.6ESB-TP
R4911
10.0k
R4943
10.0k
R4910
1K
GR/Y
2SA1048-T
Q4901
R4944
1K
GR/Y
2SA1048-T
Q4902
RD5.6ESB-TP
D4915
RD5.6ESB-TP
D4914

3.12 R,G,B CRT DRIVE ASSY

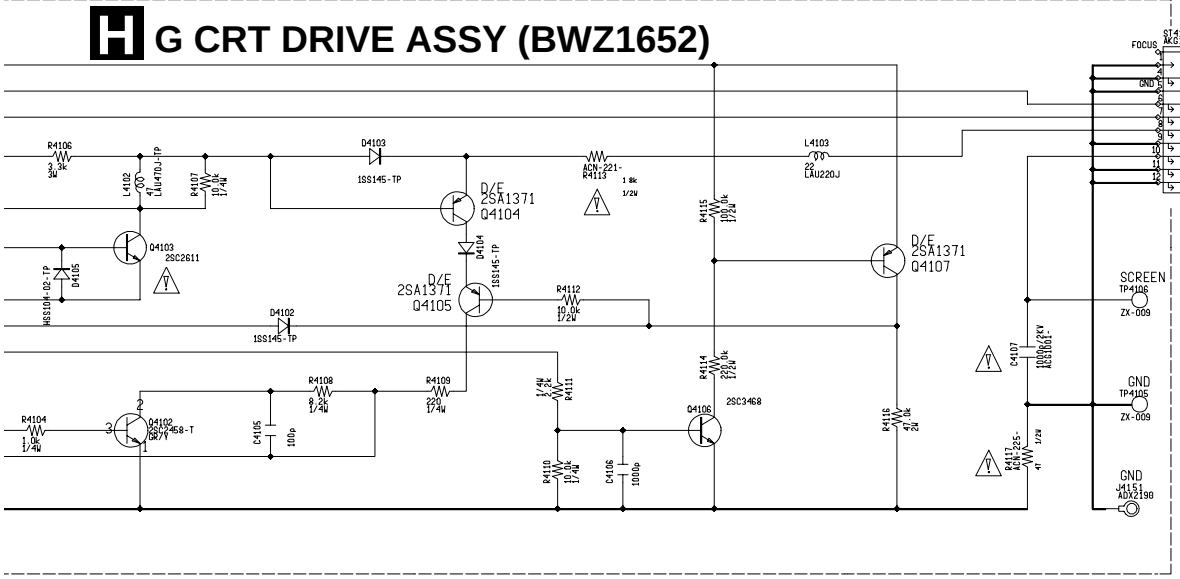


I R CRT DRIVE ASSY (BWZ1651)



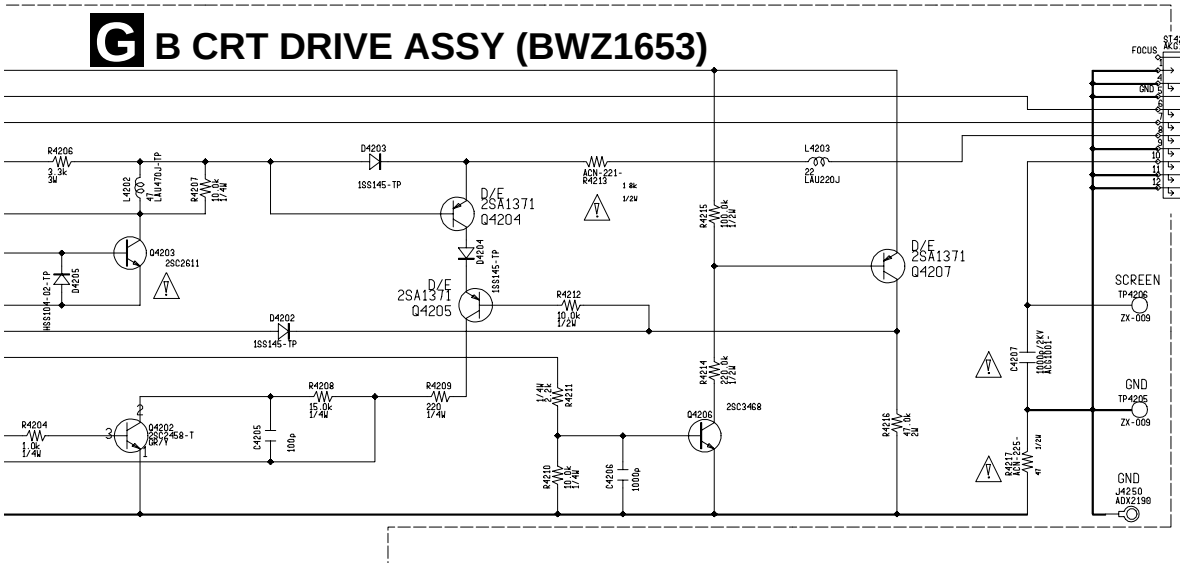
CRT SERVICE ASSY(R)

H G CRT DRIVE ASSY (BWZ1652)



CRT SERVICE ASSY(G)

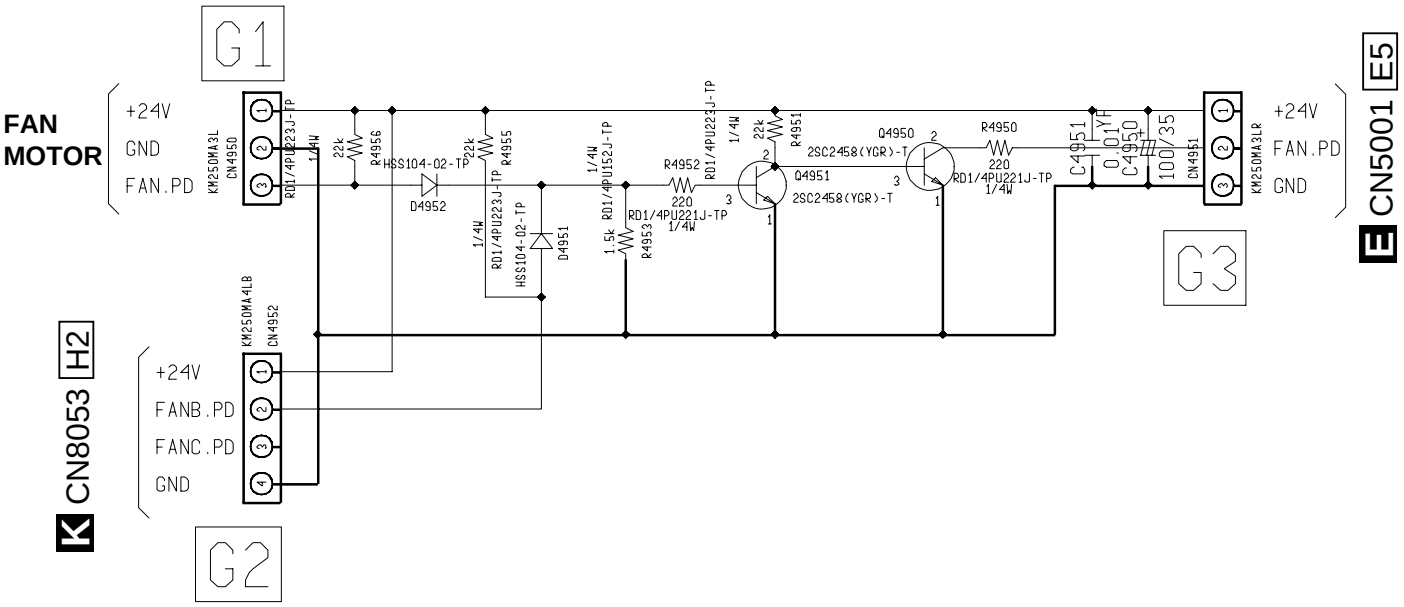
G B CRT DRIVE ASSY (BWZ1653)



CRT SERVICE ASSY(B)

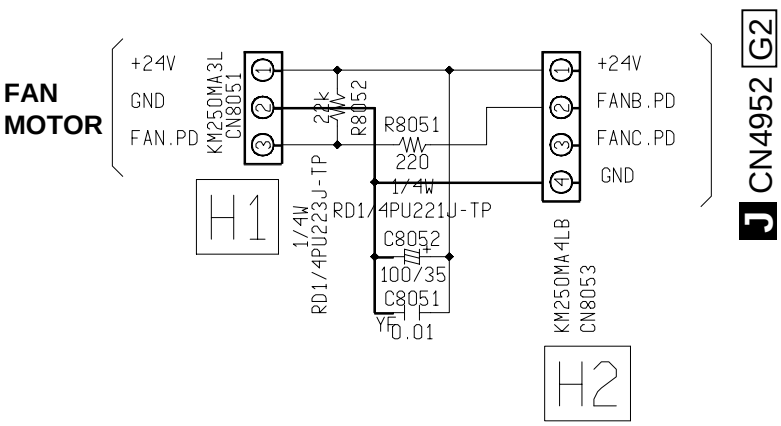
3.13 FAN CONNECTION A ASSY

J FAN CONNECTION A ASSY (AWZ6281)



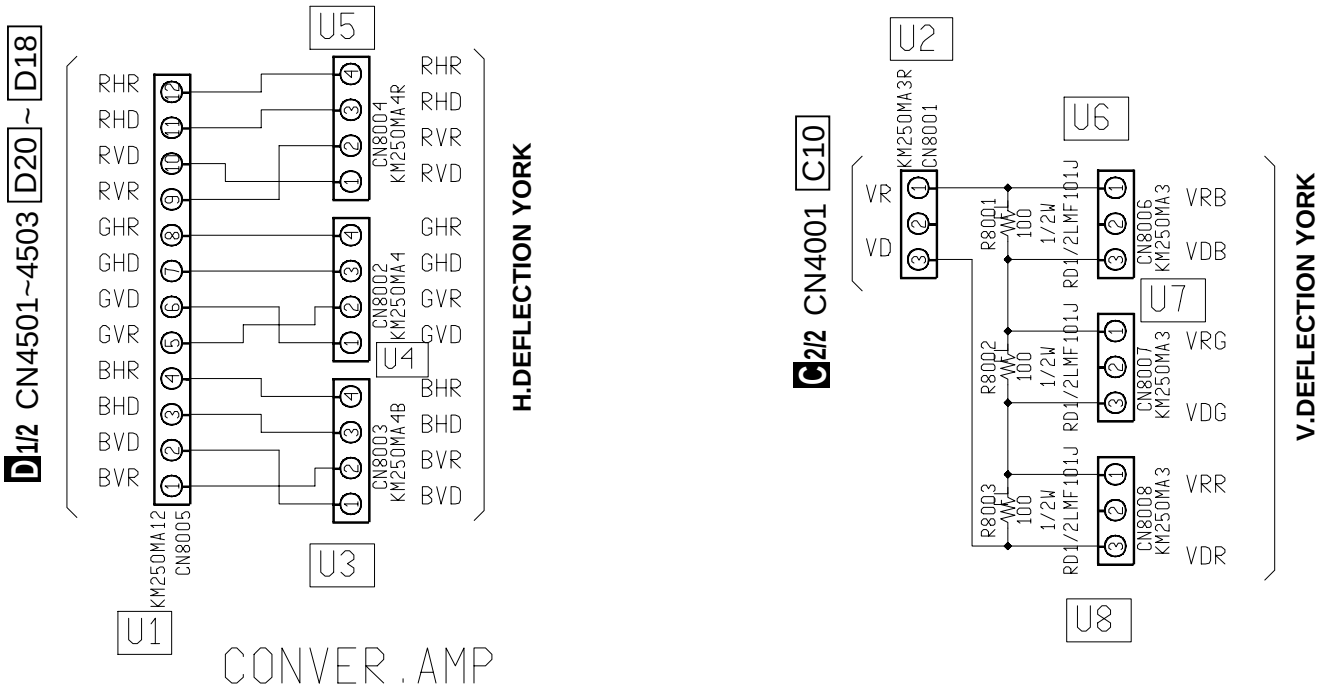
3.14 FAN CONNECTION B ASSY

K FAN CONNECTION B ASSY (AWZ6282)



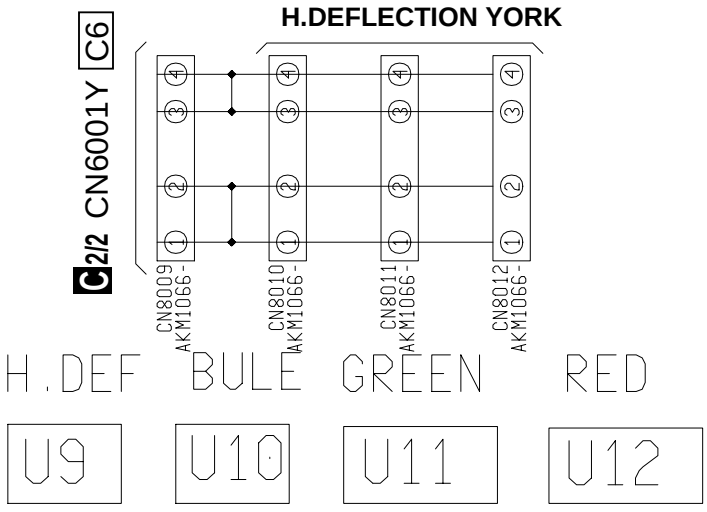
3.15 YORK CONNECTION A ASSY

L YORK CONNECTION ASSY A (AWZ6280)



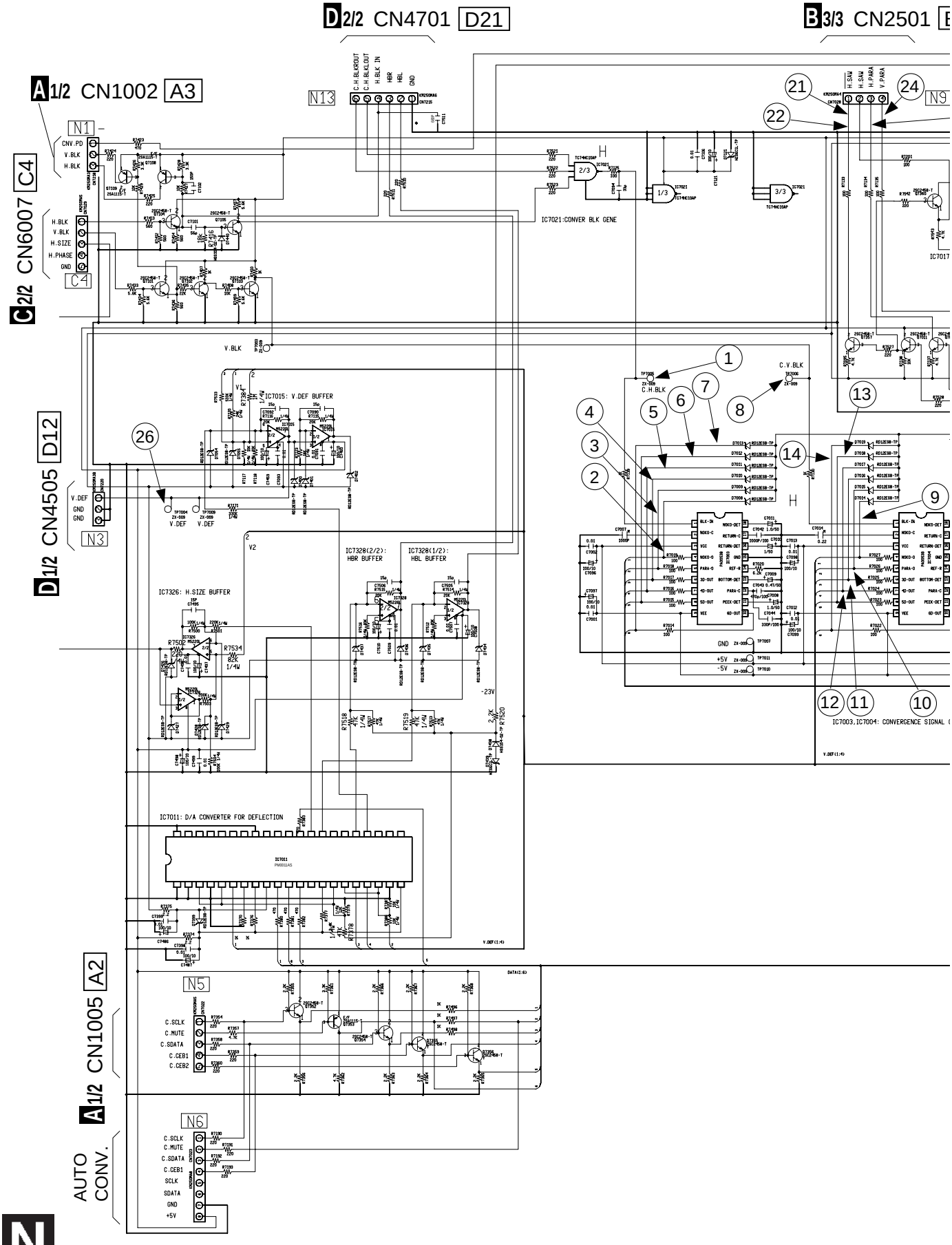
3.16 YORK CONNECTION B ASSY

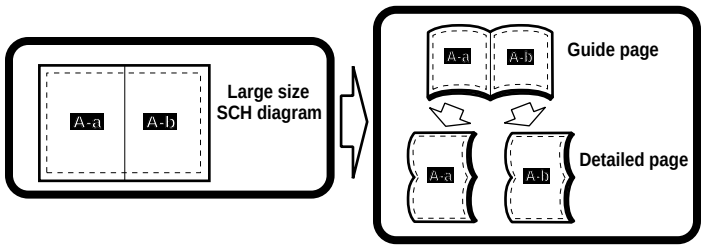
M YORK CONNECTION ASSY B (AWZ6308)



3.17 CONVERGENCE ASSY

N CONVERGENCE ASSY (AWZ6285)





501 B2

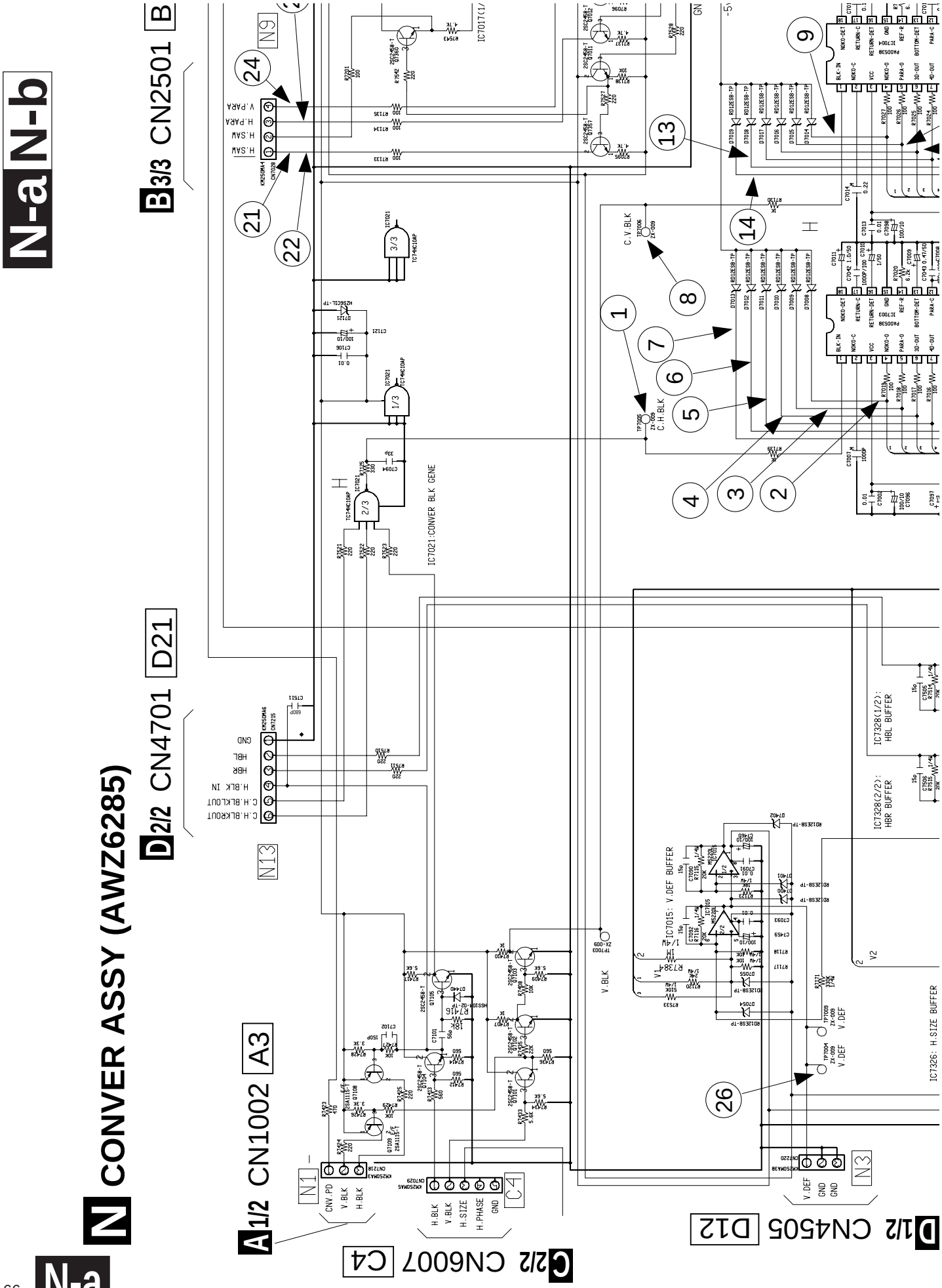
C2/2 CN6007 C4

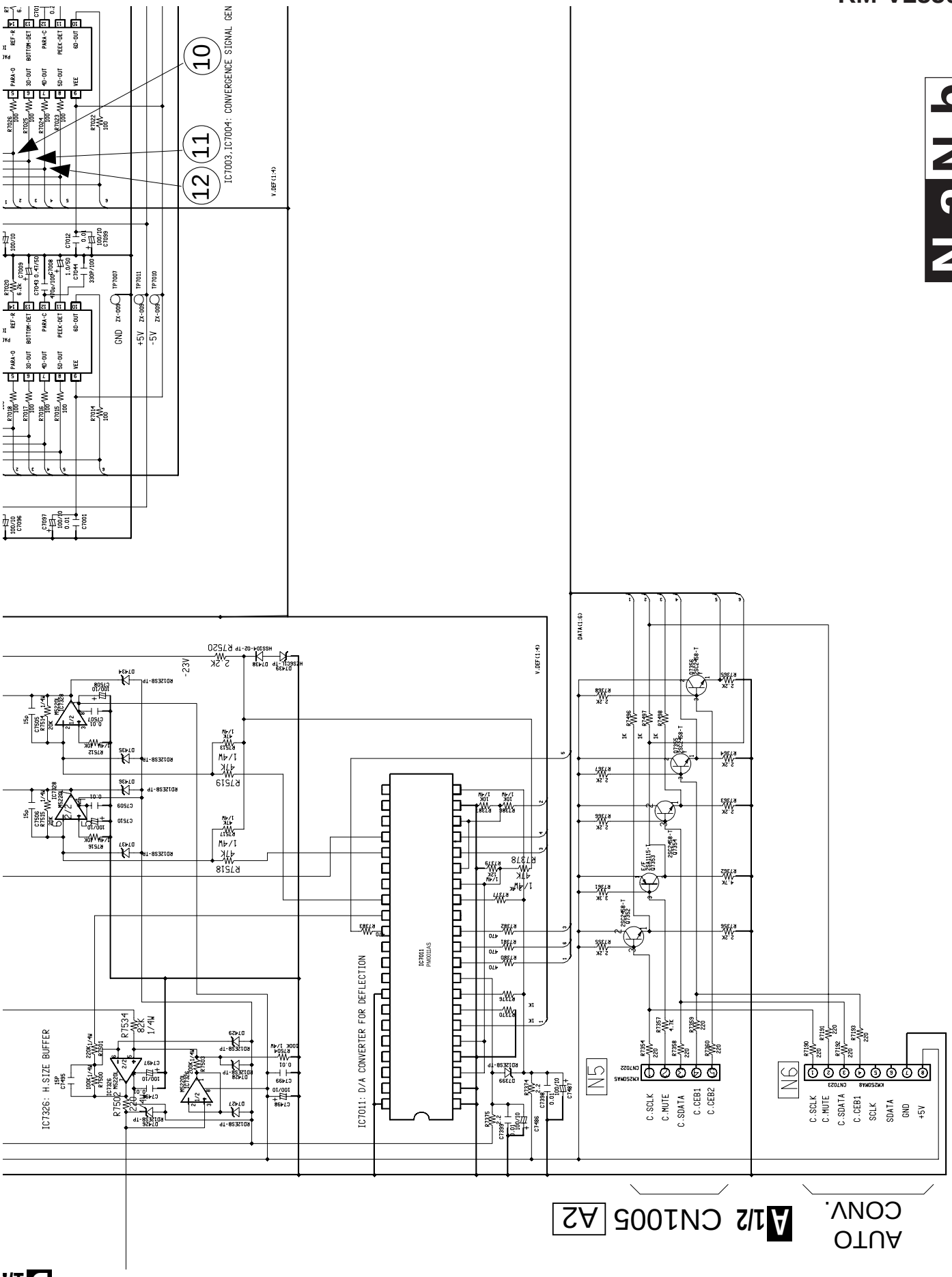
D1/2 CN4507 D11

D1/2 CN4506 D13

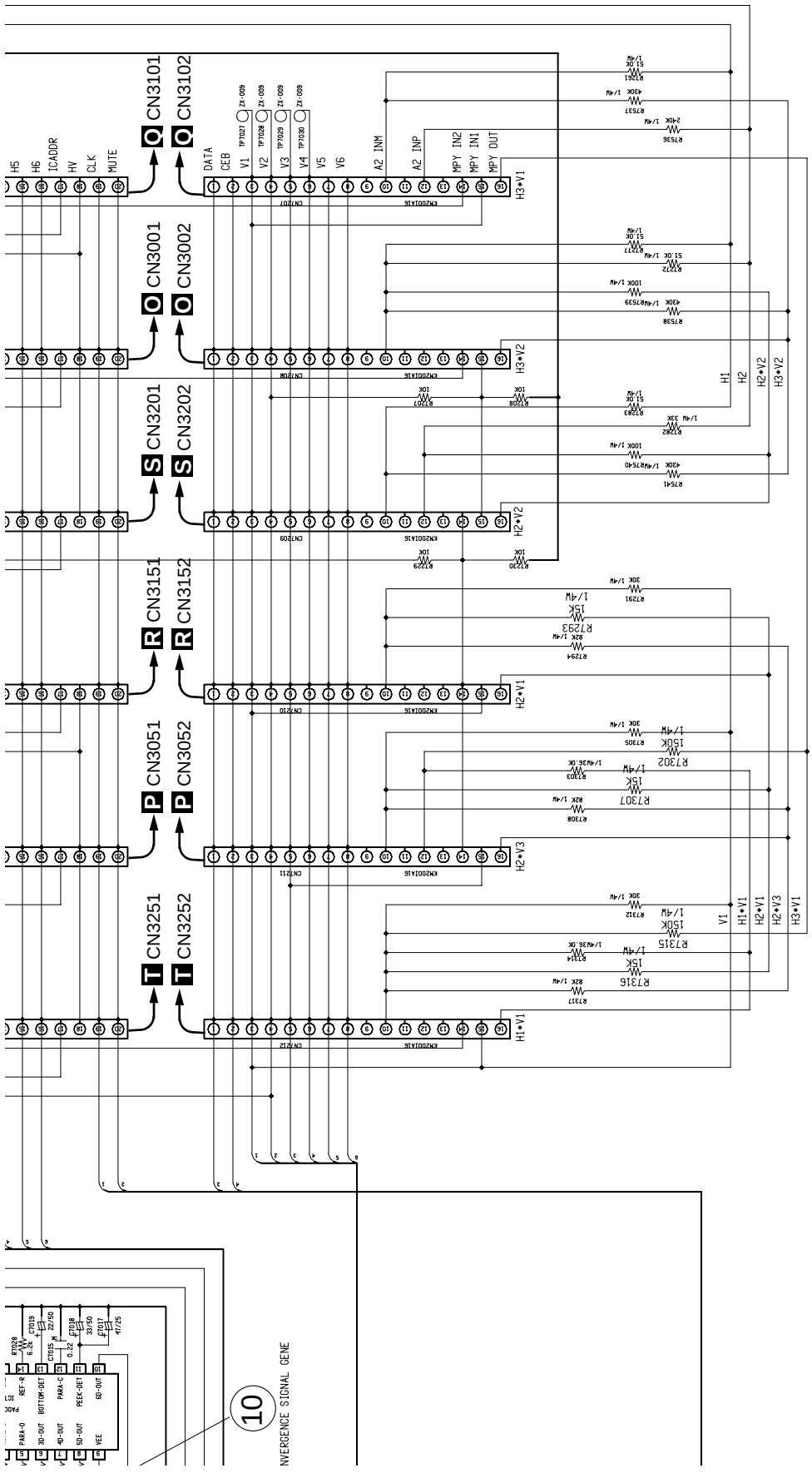
D1/2 CN4511 D14

T CN3251
T CN3252
P CN3051
P CN3052
R CN3151
R CN3152
S CN3201
S CN3202
O CN3001
O CN3002
Q CN3101
Q CN3102


N-a N-b
N CONVER ASSY (AWZ6285)
A1/2 CN1002 A3
B3/3 CN2501 B
C2/2 CN6007 C4
D1/2 CN4505 D12
D2/2 CN4701 D21
IC7021:CONVER BLK GENE
IC7328(1/2): HBL BUFFER
IC7328(2/2): HBR BUFFER
IC7015: V.DEF BUFFER
IC7326: H.SIZE BUFFER
C.V.BLK
C.H.BLK
V.BLK
V.DEF
H.BLK
V.BLK
H.SIZE
H.PHASE
GND
V.DEF
GND
GND
CNV.PD
V.BLK
H.BLK
H.BLK IN
C.H.BLKOUT
C.H.BLKOUT
HBR
HBL
GND

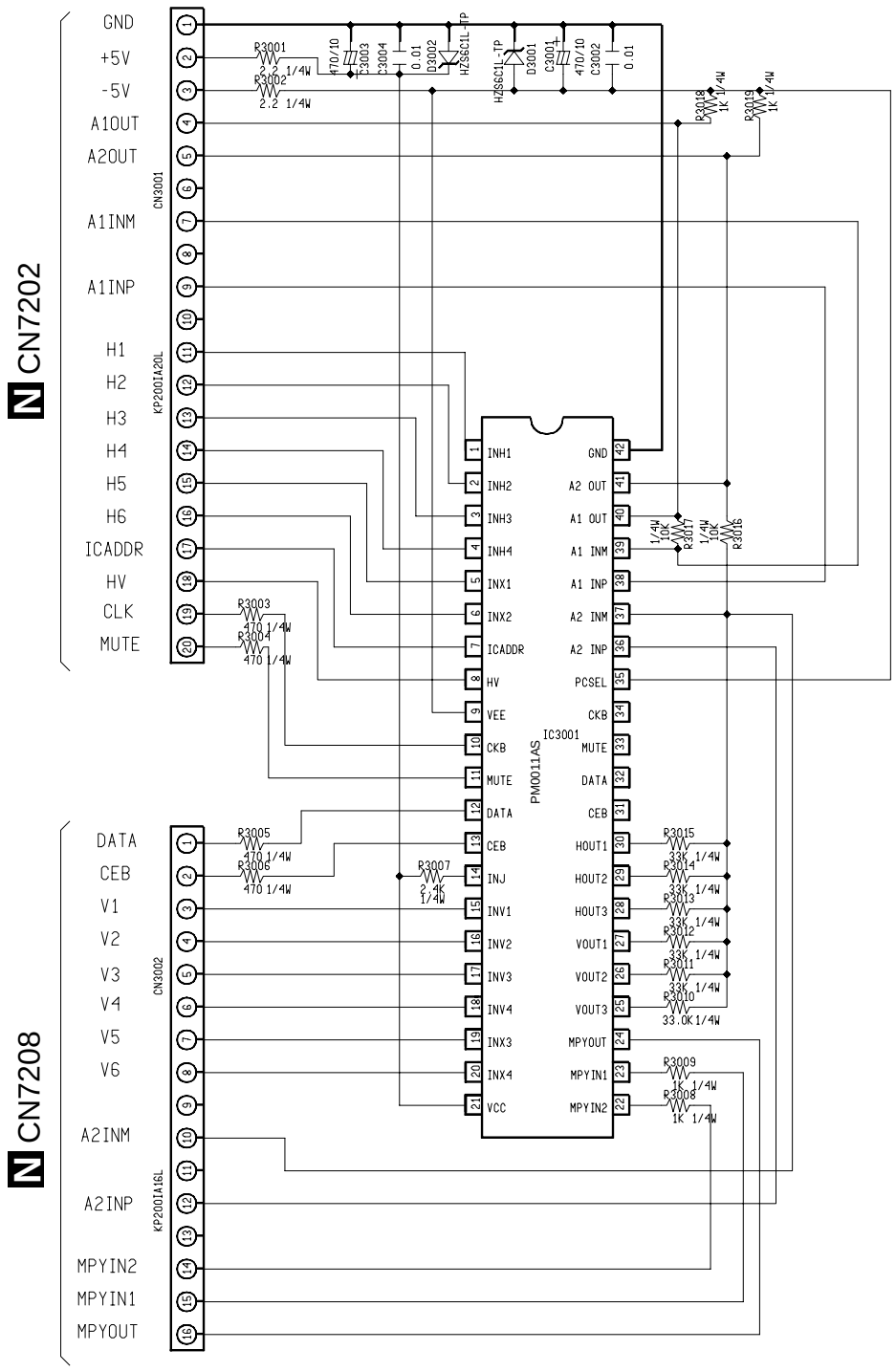

IC7003,IC7004: CONVERGENCE SIGNAL GEN
10
11
12
V.DEF(1-4)
GND
+5V
-5V
-23V
IC7326: H SIZE BUFFER
IC7011: D/A CONVERTER FOR DEFLECTION
DATA(1-6)
C.SCLK
C.MUTE
C.SDATA
C.CEB1
C.CEB2
SCLK
SDATA
GND
+5V
AUTO CONV.
A1/2 CN1005 A2

N-a N-b
D1/2 CN4507 D11
C2/2 CN6007 C4
2501 B2
D1/2 CN4506 D13
1/2 CN4511 D14
N8
N10
N11
N4
N9
CNV.PD
+23V
GND
-23V
NC
+5V
-5V
GH
RH
BH
GV
RV
BV
GND
+5V
-5V
A1 OUT
A2 OUT
A1 INM
A1 INP
H1
H2
H3
H4
H5
H6
ICADDR
Focus
H.PARA BUFFER
H.SAW INVERTER
IC7017(2/2)
IC7017(1/2)
15
16
17
18
19
20
23
24
25
9


CN3101
CN3102
CN3001
CN3002
CN3201
CN3202
CN3151
CN3152
CN3051
CN3052
CN3251
CN3252
H5
H6
ICADDR
HV
CLK
MUTE
DATA
CEB
V1
V2
V3
V4
V5
V6
A2 INM
A2 INP
MPY IN2
MPY IN1
MPY OUT
H3•V1
H3•V2
H2•V2
H2•V1
H2•V3
H1•V1
H1
H2
V1
CONVERGENCE SIGNAL GENE
10

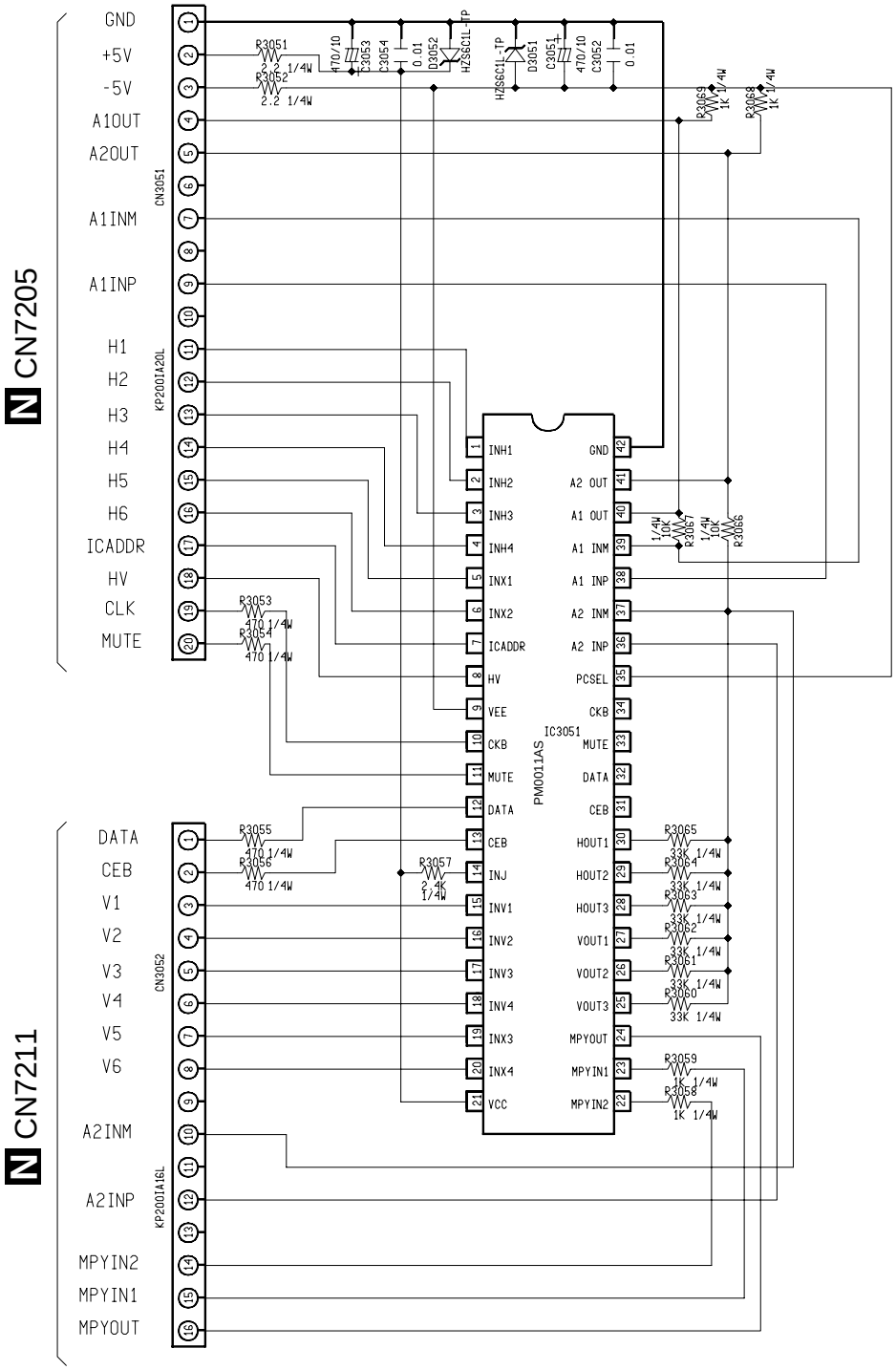
3.18 CONV. MODULE (RH)

CONV. MODULE(RH) (BWZ1644)



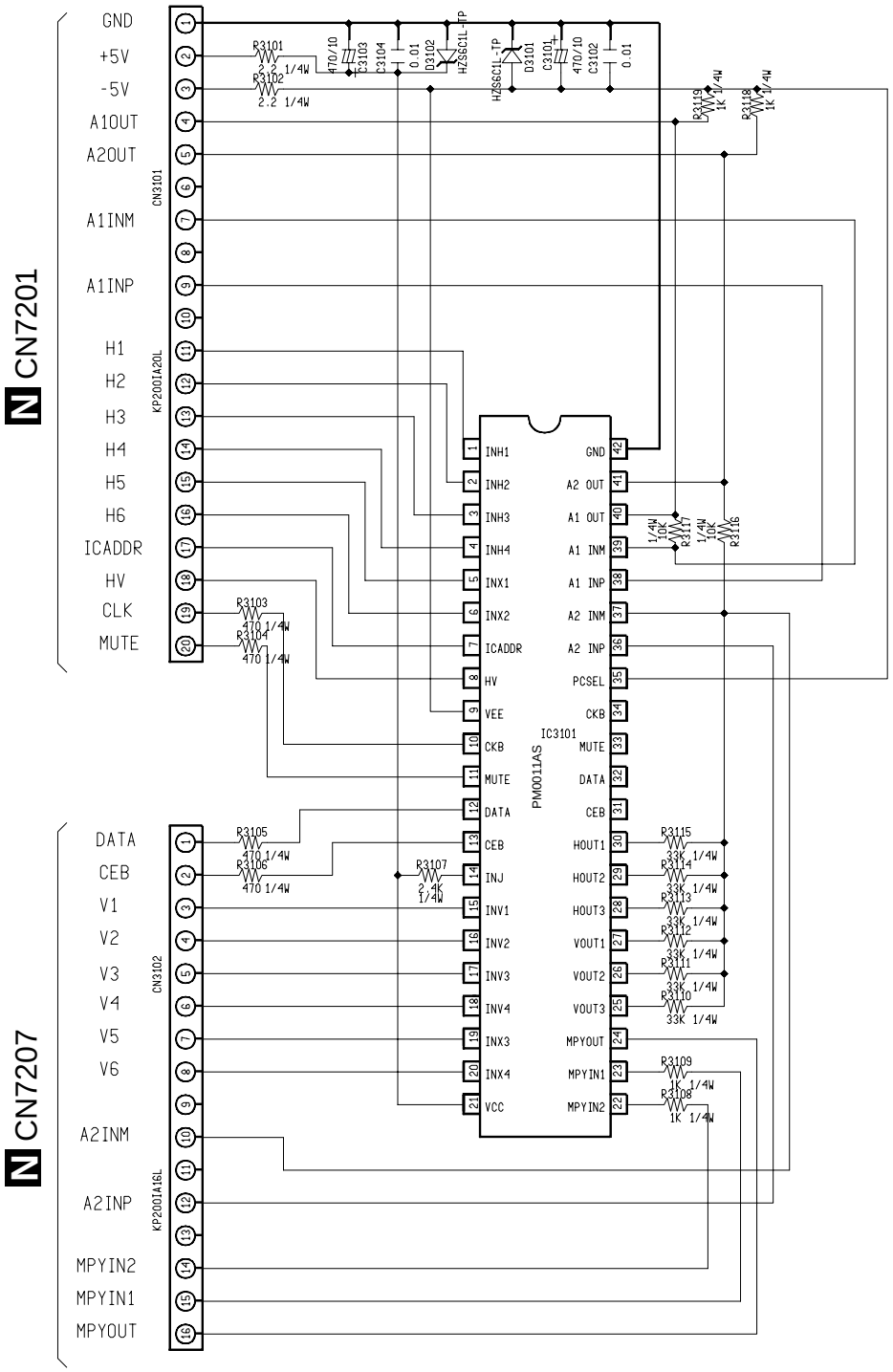
3.19 CONV. MODULE (RV)

P CONV. MODULE(RV) (BWZ1645)



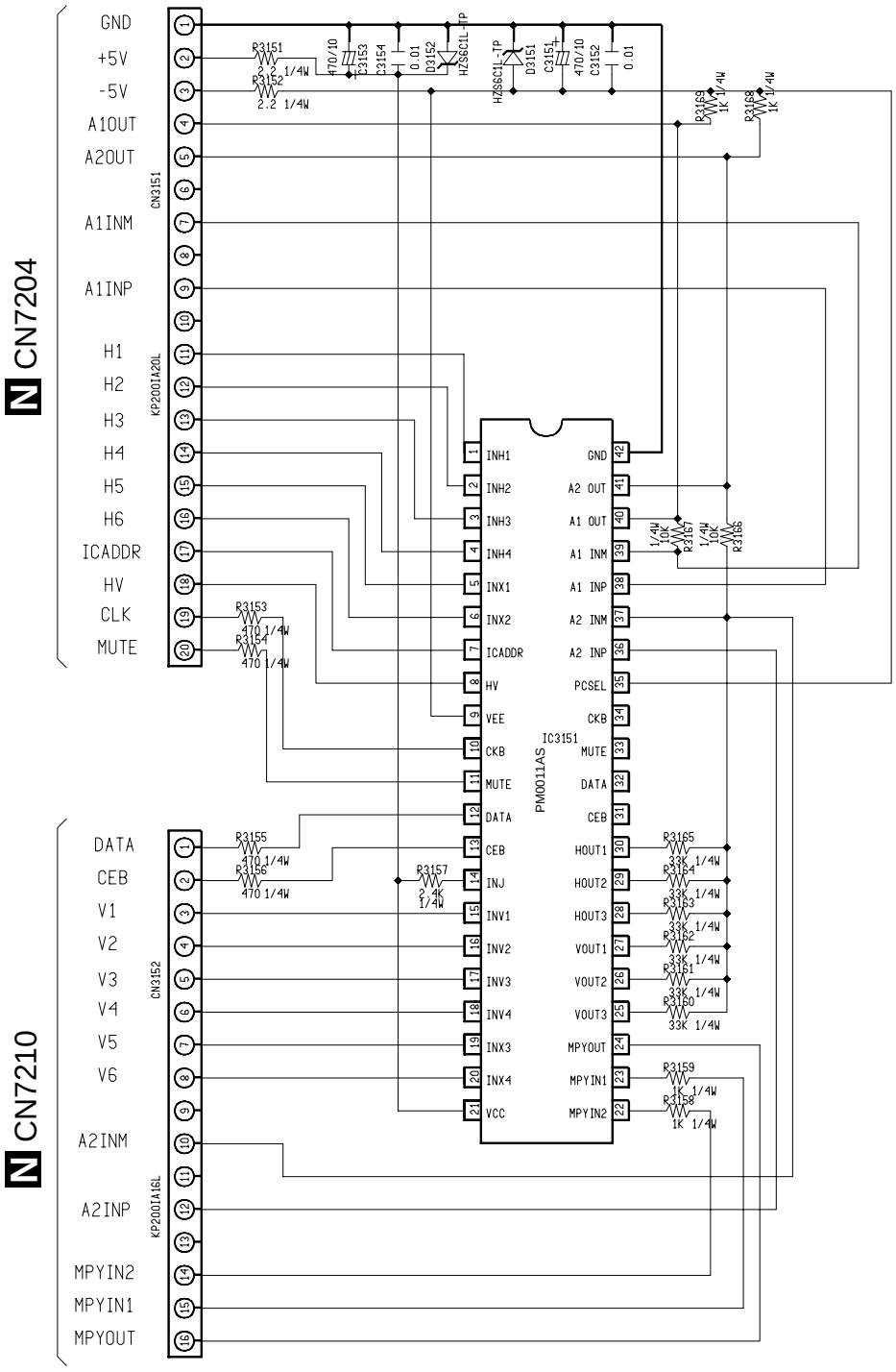
3.20 CONV. MODULE (GH)

CONV. MODULE(GH) (BWZ1646)



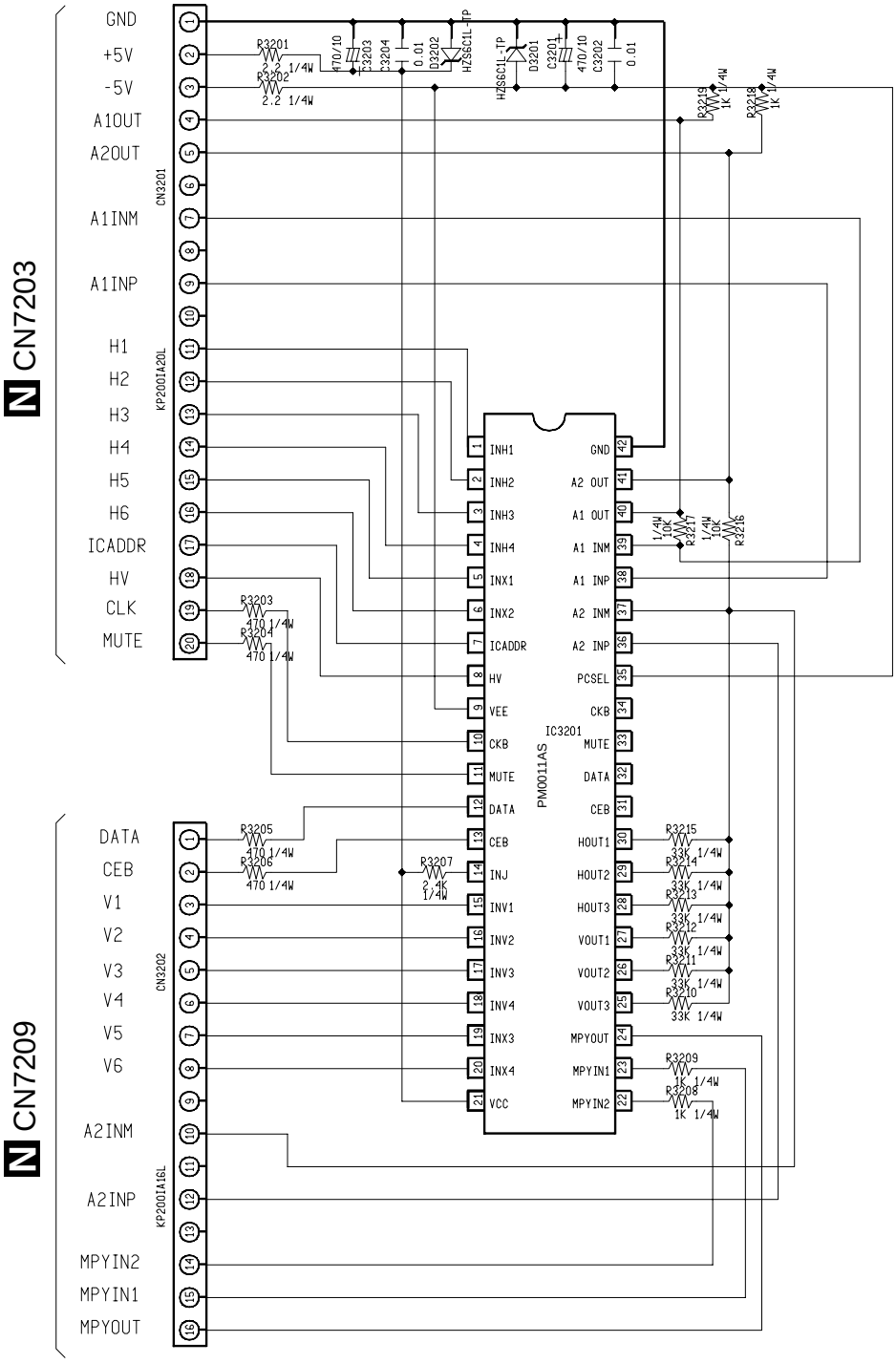
3.21 CONV. MODULE (GV)

CONV. MODULE(GV) (BWZ1647)



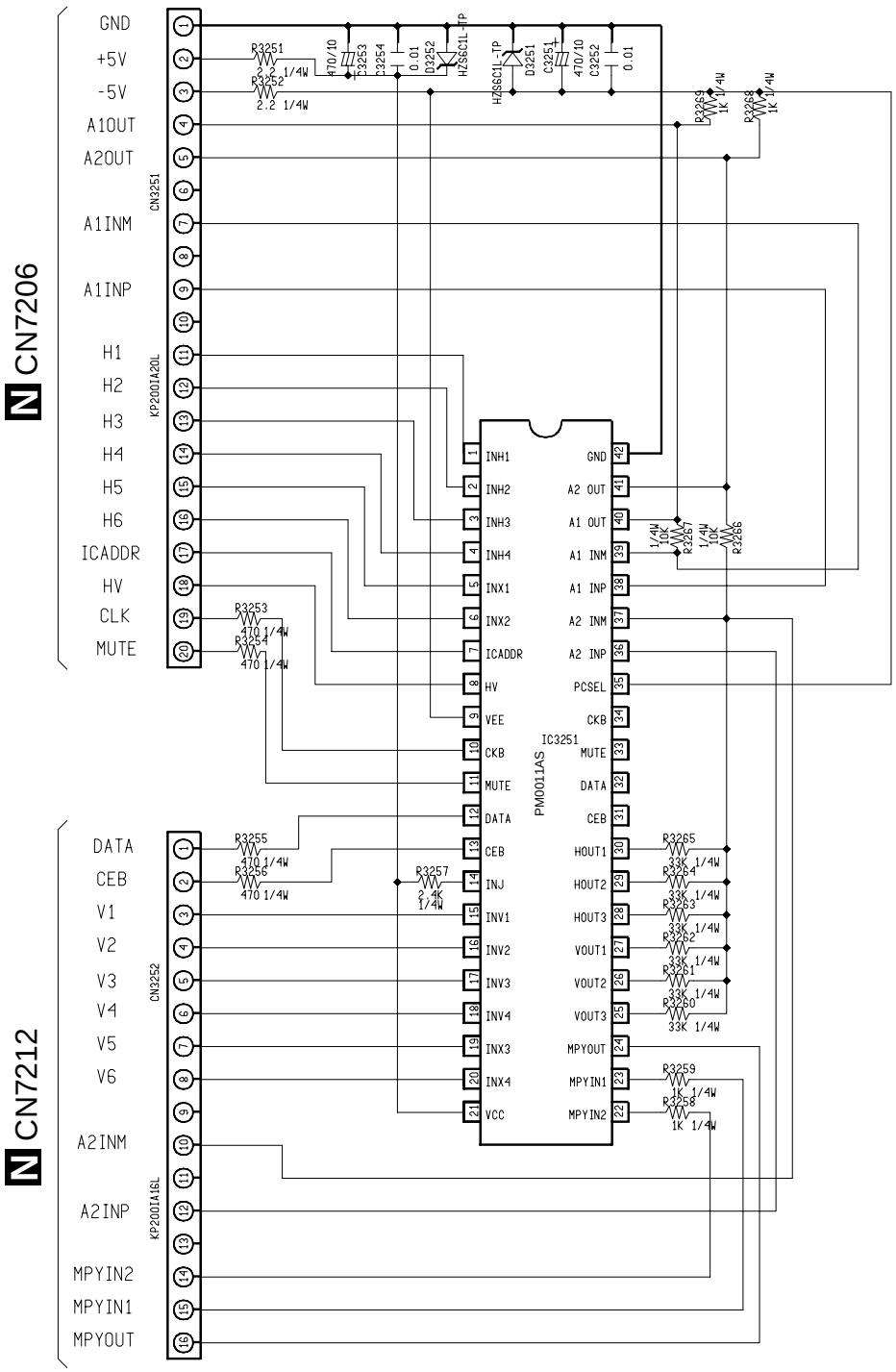
3.22 CONV. MODULE (BH)

S CONV. MODULE(BH) (BWZ1648)



3.23 CONV. MODULE (BV)

CONV. MODULE(BV) (BWZ1649)

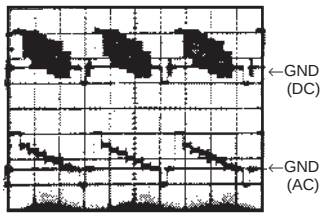


■ WAVEFORMS

A CONTROL ASSY (2/2)

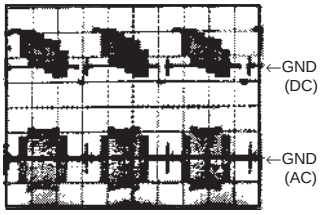
① Upper : Input color bar signal(NTSC)
Lower : IC1701-12 pin
V : 0.5V/div, H : 20µ sec/div

② Upper : Input color bar signal(PAL)
Lower : IC1701-13 pin
V : 0.5V/div, H : 20µ sec/div



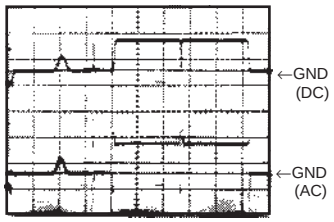
③ Upper : Input color bar signal(NTSC)
V : 0.5V/div, H : 20µ sec/div
Lower : IC1701-5 pin
V : 0.1V/div, H :20µ sec/div

④ Upper : Input color bar signal(PAL)
V : 0.5V/div, H : 20µ sec/div
Lower : IC1701-3 pin
V : 0.1V/div, H : 20µ sec/div

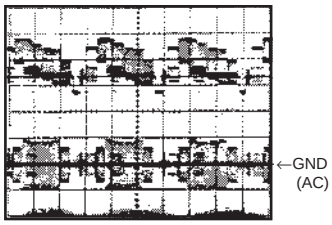


B VIDEO ASSY (2/3)

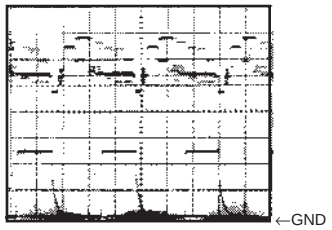
① Upper : TP2205 (Y IN)
Lower : TP2204 (Y OUT)
V : 0.5V/div, H : 5µ sec/div



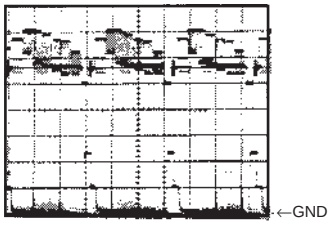
② Upper : Input color bar signal
V : 0.5V/div, H : 20µ sec/div
Lower : TP2201 (C)
V : 0.1V/div, H : 20µ sec/div



③ Upper : Input color bar signal
V : 0.5V/div, H : 20µ sec/div
Lower : IC2202-39 pin (H DRIVE OUT)
V : 2V/div, H : 20µ sec/div

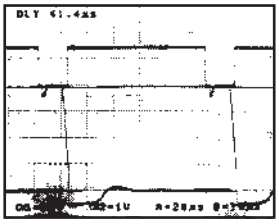


④ Upper : Input color bar signal
V : 0.5V/div, H : 20µ sec/div
Lower : IC2202-35 pin (H BP)
V : 5V/div, H : 20µ sec/div



B VIDEO ASSY (3/3)

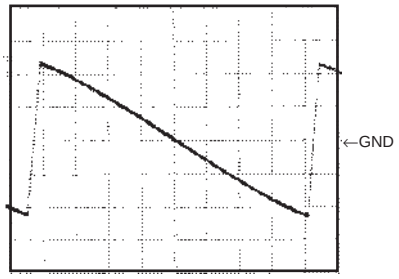
⑤ Upper : G input pin
V : 0.5V/div, H : 20µ sec/div
Lower : IC2501-15 pin(CLAMP PULSE)
V : 1V/div, H:20µ sec/div



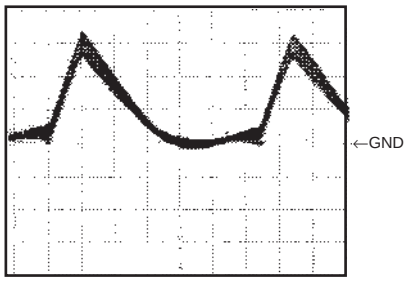
D CONV. AMP ASSY (1/2)

E POWER SUPPLY ASSY

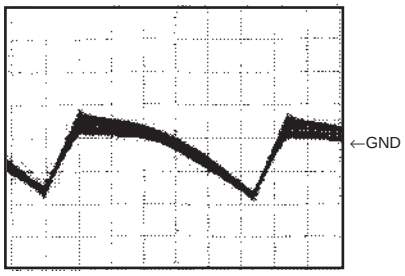
① TP4509 (V.RET)
V : 0.5V/div, H : 0.2msec/div



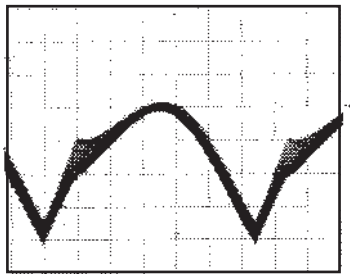
② D18-4pin (R HR)
V : 0.2V/div, H : 10µ sec/div



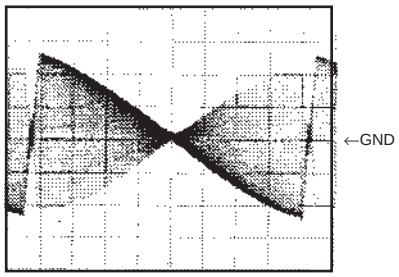
③ D19-4pin (G HR)
V : 0.2V/div, H : 10µ sec/div



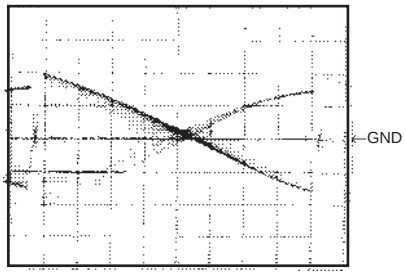
④ D20-4pin (B HR)
V : 0.2V/div, H : 10µ sec/div



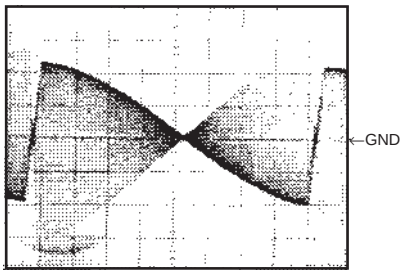
⑤ D18-1pin (R VR)
V : 0.2V/div, H :0.2msec/div



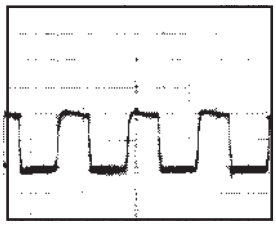
⑥ D19-1pin (G VR)
V : 0.2V/div, H :0.2msec/div



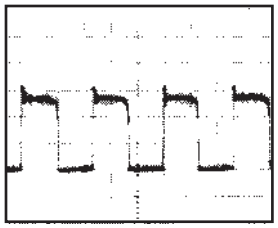
⑦ D20-1pin (B VR)
V : 0.2V/div, H :0.2msec/div



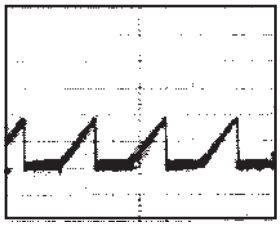
① Q5000 Gate voltage
Vg: 10V/div, t : 10µ sec/div



② Q5000 Drain voltage
Vg: 200V/div, t : 10µ sec/div

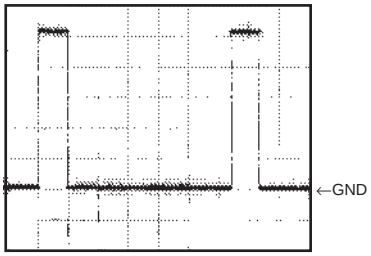


③ Q5000 Drain current
Id: 2A/div, t : 10µ sec/div

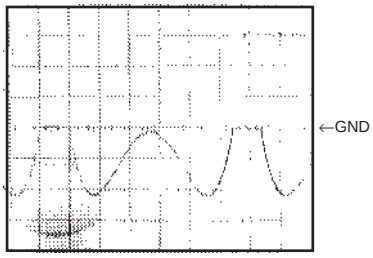


N CONVERGENCE ASSY

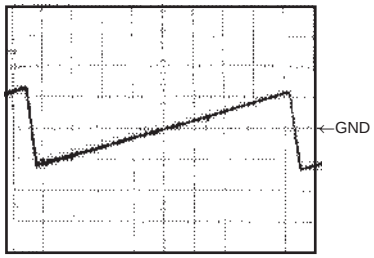
① TP7005 (C.H.BLK)
H : 1V/div, V : 10μ sec/div



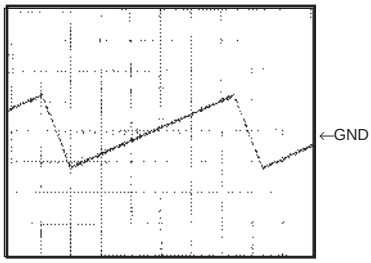
⑤ D7011 cathode (H4)
H : 1V/div, V : 10μ sec/div



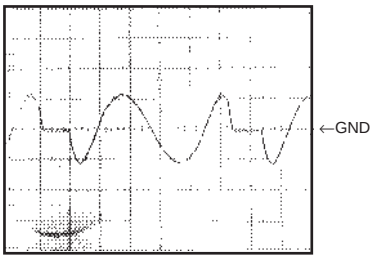
⑨ D7014 cathode (V1)
H : 1V/div, V : 0.2msec/div



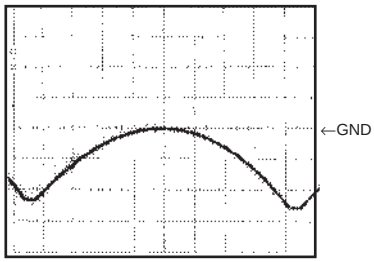
② D7008 cathode (H1)
H : 1V/div, V : 10μ sec/div



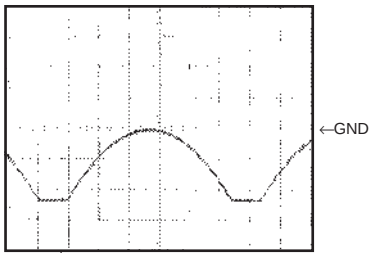
⑥ D7012 cathode (H5)
H : 1V/div, V : 10μ sec/div



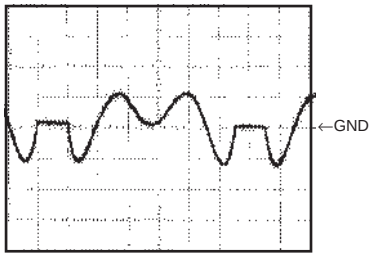
⑩ D7015 cathode (V2)
H : 1V/div, V : 0.2msec/div



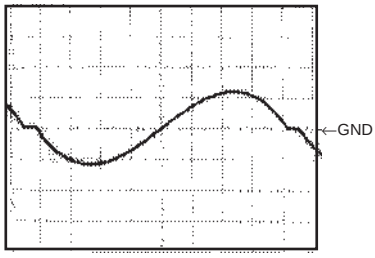
③ D7009 cathode (H2)
H : 1V/div, V : 10μ sec/div



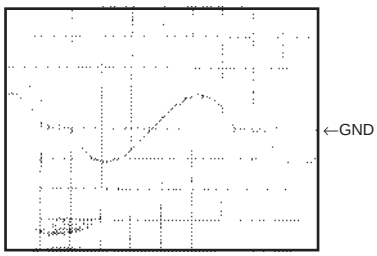
⑦ D7013 cathode (H6)
H : 1V/div, V : 10μ sec/div



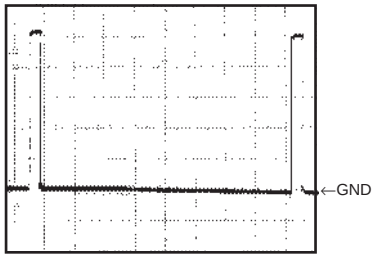
⑪ D7016 cathode (V3)
H : 1V/div, V : 0.2msec/div



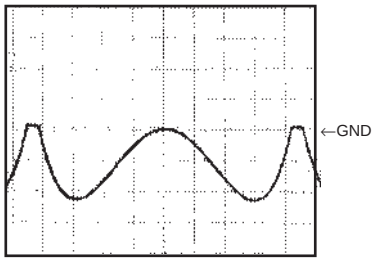
④ D7010 cathode (H3)
H : 1V/div, V : 10μ sec/div



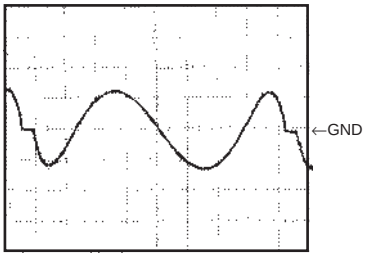
⑧ TP7006 (C.V.BLK)
H : 1V/div, V : 2msec/div



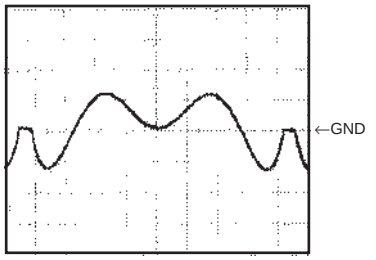
⑫ D7017 cathode (V4)
H : 1V/div, V : 0.2msec/div



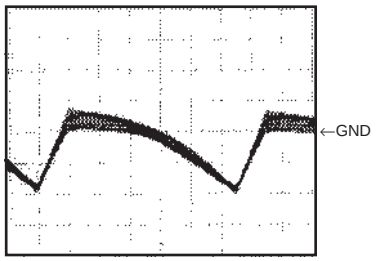
⑬ D7018 cathode (V5)
H : 1V/div, V : 0.2msec/div



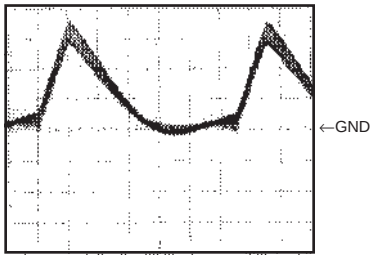
⑭ D7019 cathode (V6)
H : 1V/div, V : 0.2msec/div



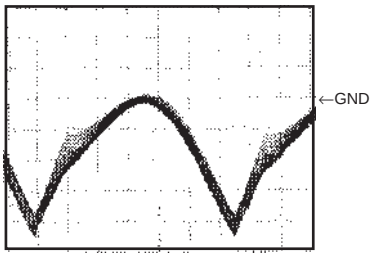
⑮ N10-1 pin (GH)
V : 0.2V/div, H : 10μ sec/div



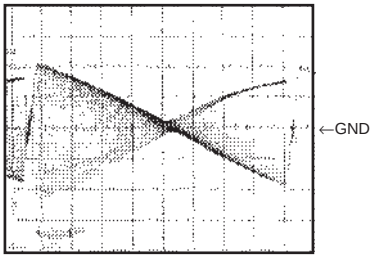
⑯ N10-3 pin (RH)
V : 0.2V/div, H : 10μ sec/div



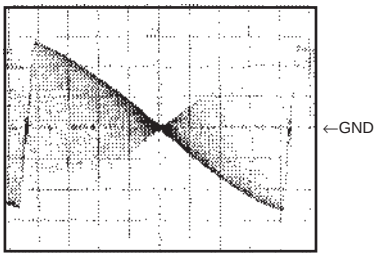
⑰ N10-5 pin (BH)
V : 0.2V/div, H : 10μ sec/div



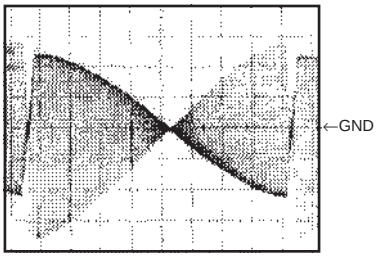
⑱ N11-1 pin (GV)
H : 0.2V/div, V : 0.2msec/div



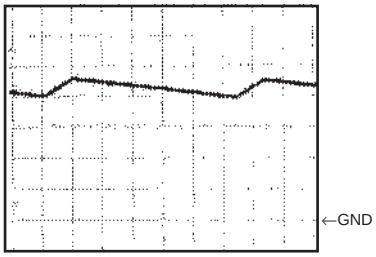
⑲ N11-3 pin (RV)
H : 0.2V/div, V : 0.2msec/div



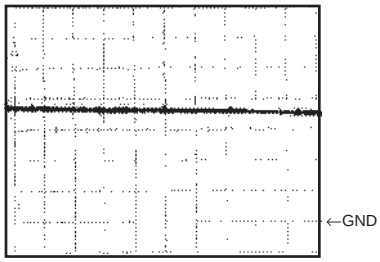
⑳ N11-5 pin (BV)
H : 0.2V/div, V : 0.2msec/div



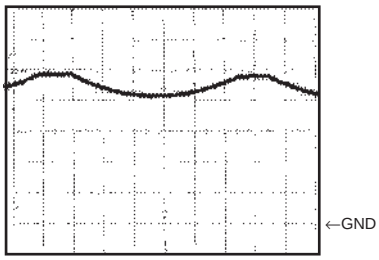
㉑ N9-1 pin (* H.SAW)
V : 2V/div, H : 10μ sec/div



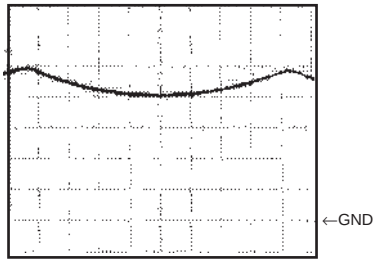
㉒ N9-2 pin (H.SAW)
V : 2V/div, H : 10μ sec/div



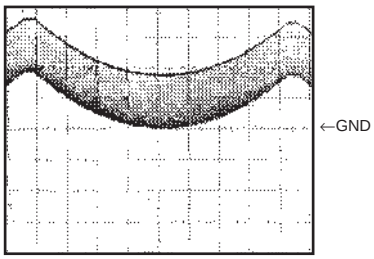
㉓ N9-3 pin (H.PARA)
V : 2V/div, H : 10μ sec/div



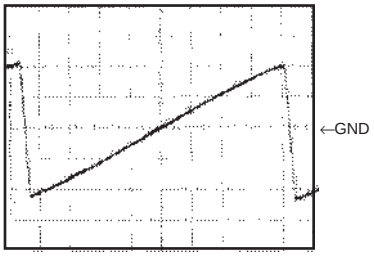
㉔ N9-4 pin (V.PARA)
H : 2V/div, V : 0.2msec/div



㉕ N4-1 pin (H.V.PARA)
H : 1V/div, V : 0.2msec/div



㉖ TP7001 (V.DEF)
H : 0.5V/div, V : 0.2msec/div

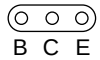
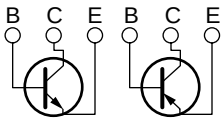
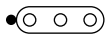
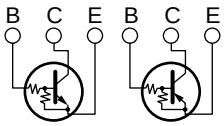
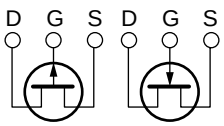
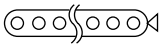
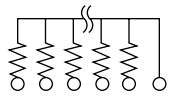
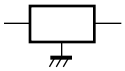


4. PCB CONNECTION DIAGRAM

4.1 FAN CONNECTION A ASSY,FAN CONNECTION B ASSY

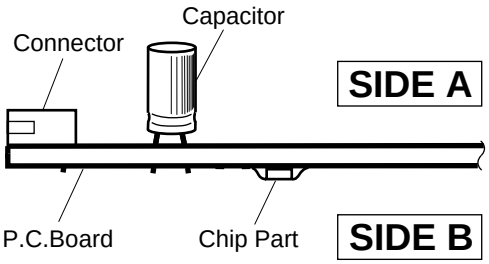
NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

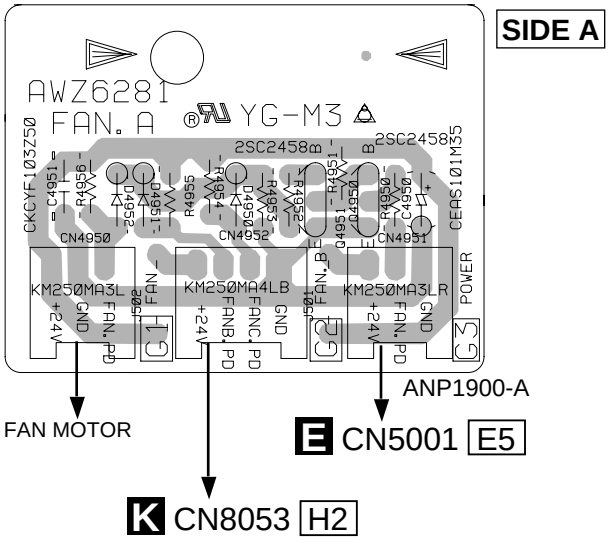
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.

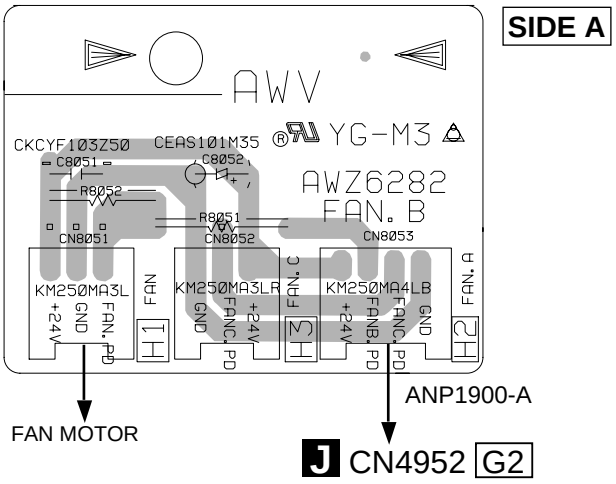
4. Viewpoint of PCB diagrams



J FAN CONNECTION A ASSY

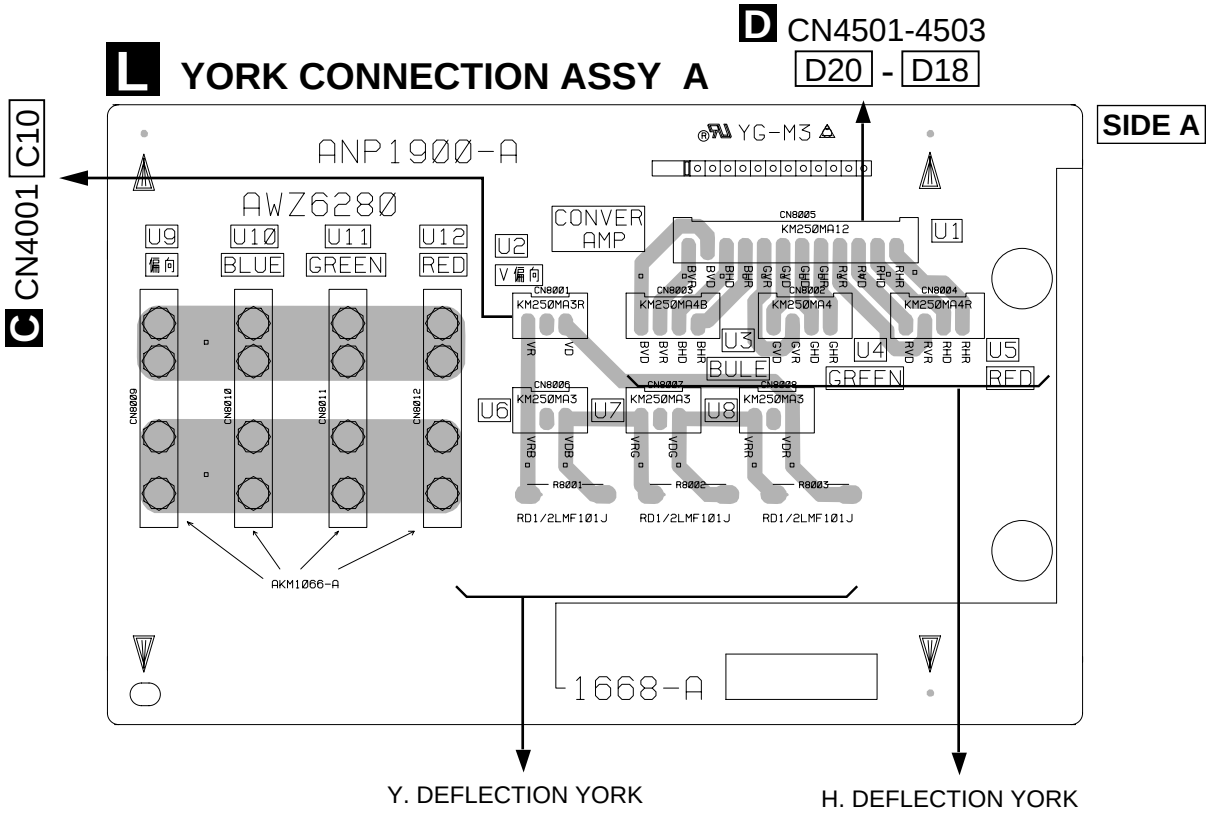


K FAN CONNECTION B ASSY

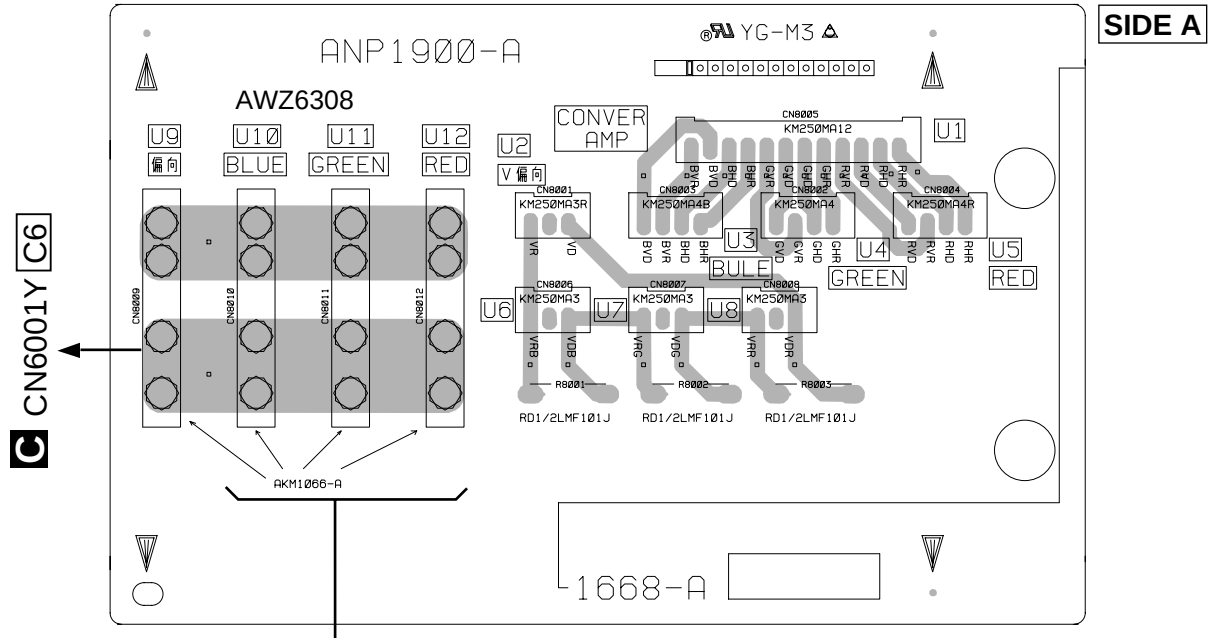


4.2 YORK CONNECTION A ASSY,YORK CONNECTION B ASSY

L **YORK CONNECTION ASSY A**

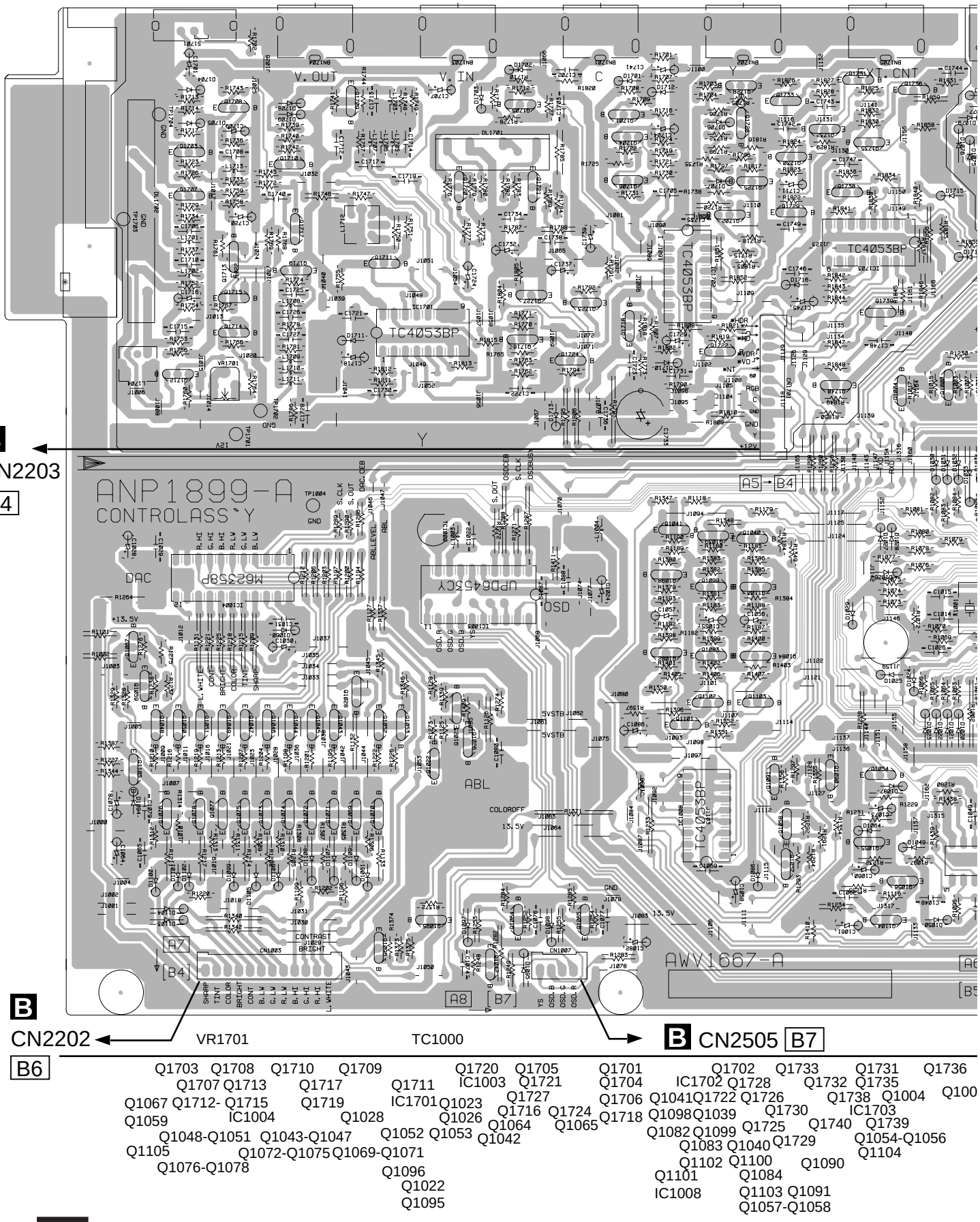


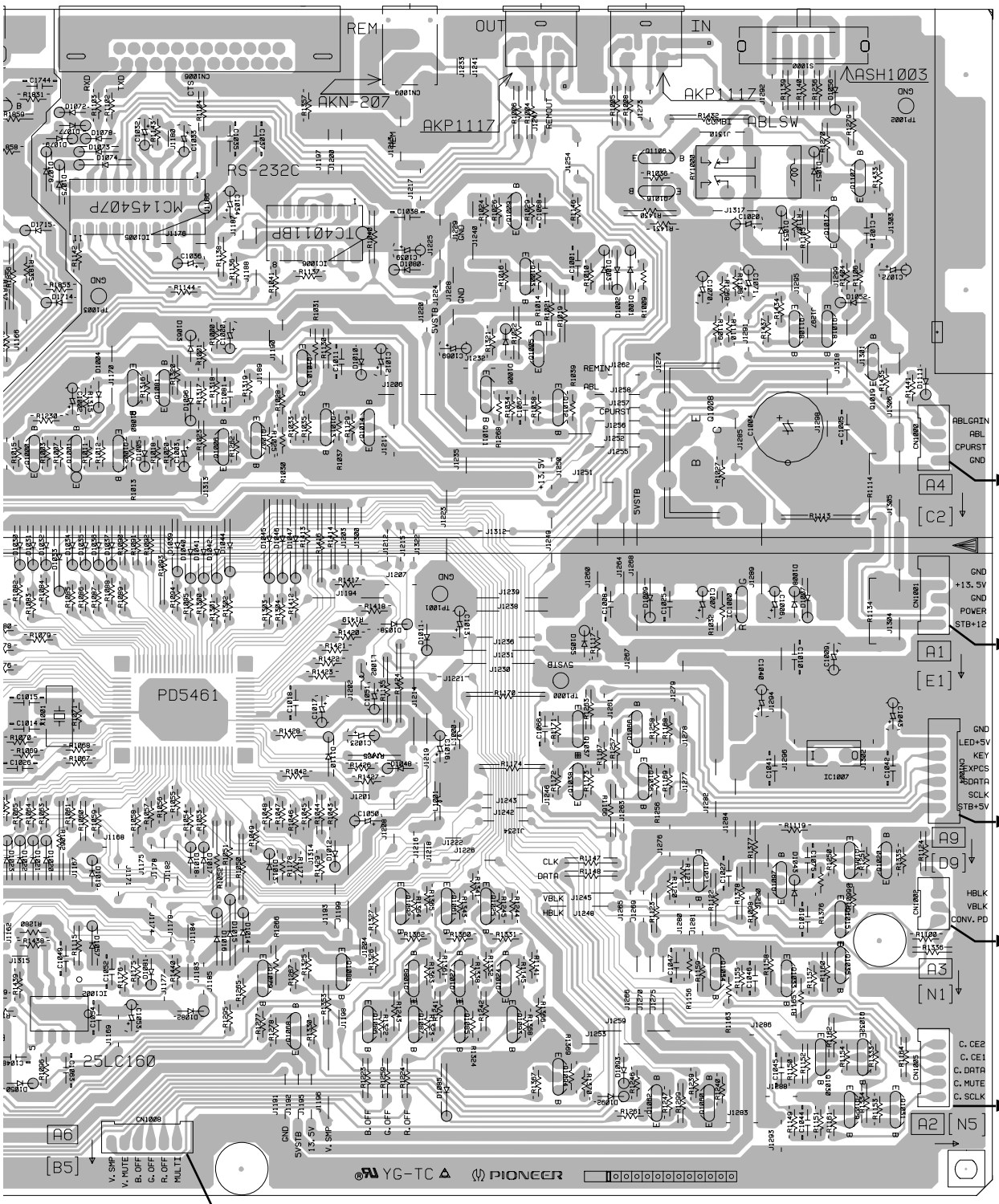
M **YORK CONNECTION ASSY B**



4.3 CONTROL ASSY

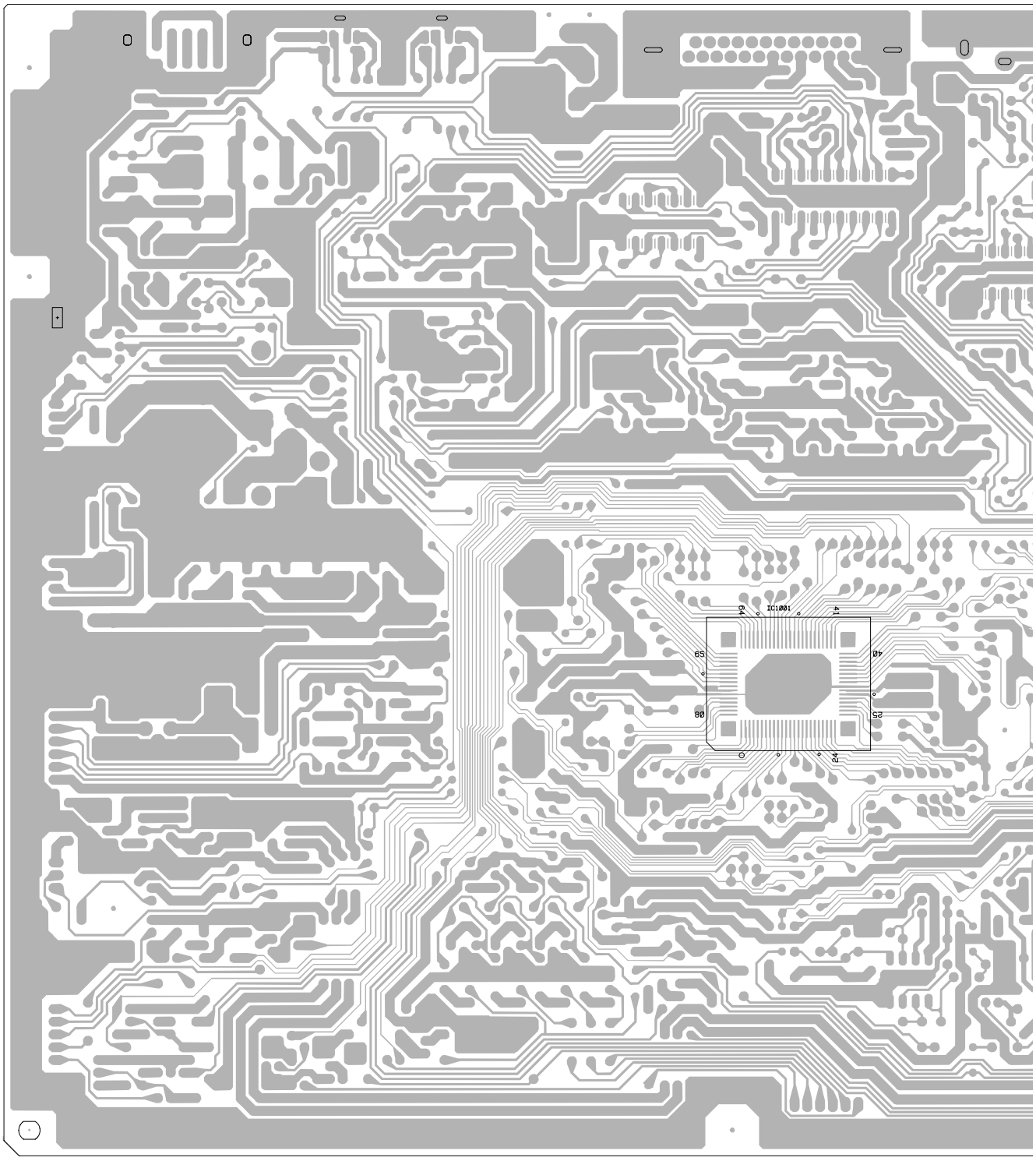
A CONTROL ASSY



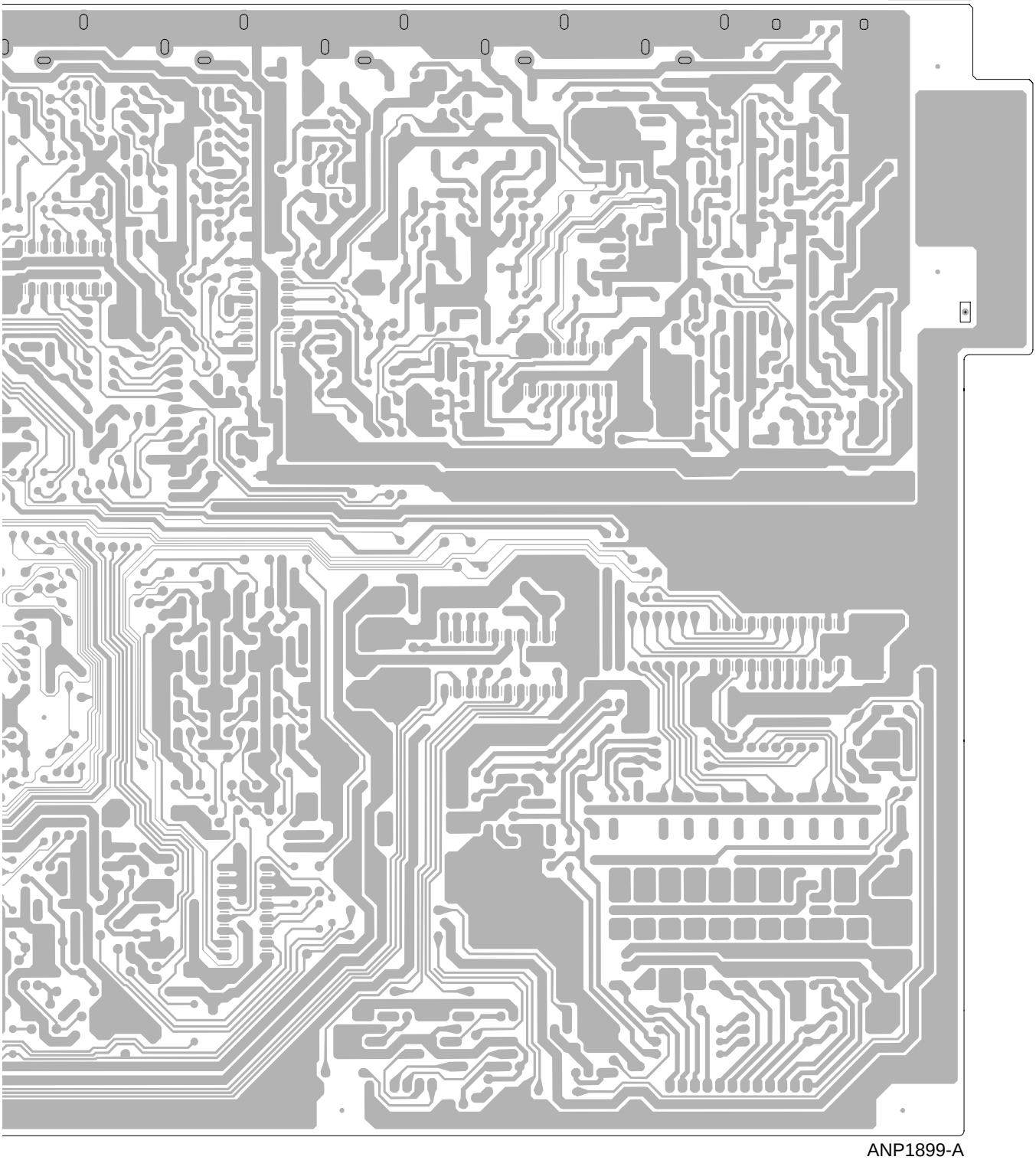


Q1736 Q1080 Q1081 Q1006 IC1006 Q1011 Q1009 Q1106 Q1008 Q1017 Q1016
Q1000-Q1002 Q1007 Q1010 Q1061 Q1003 Q1016 IC1010 Q1107
IC1002 Q1079 Q1013-Q1014 Q1025 Q1005 Q1066 Q1021 Q1018-Q1020
Q1068 Q1092 Q1024 Q1012 Q1034 Q1108 Q1063
056 Q1085-Q1089 Q1027 Q1036-Q1038 Q1097 Q1015
Q1093-Q1094 Q1062 Q1035
Q1060 Q1029-Q1033

A CONTROL ASSY



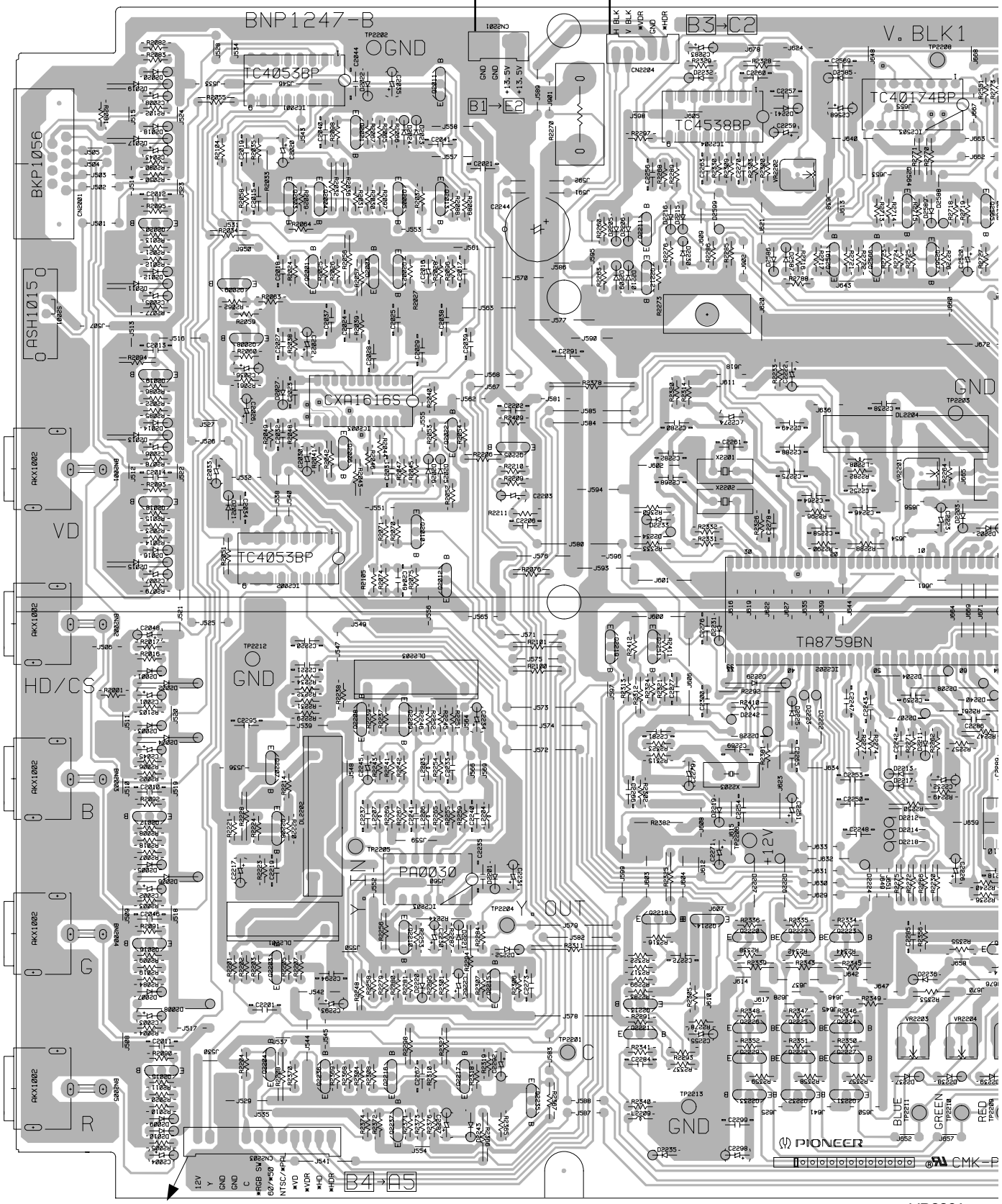
SIDE B



ANP1899-A

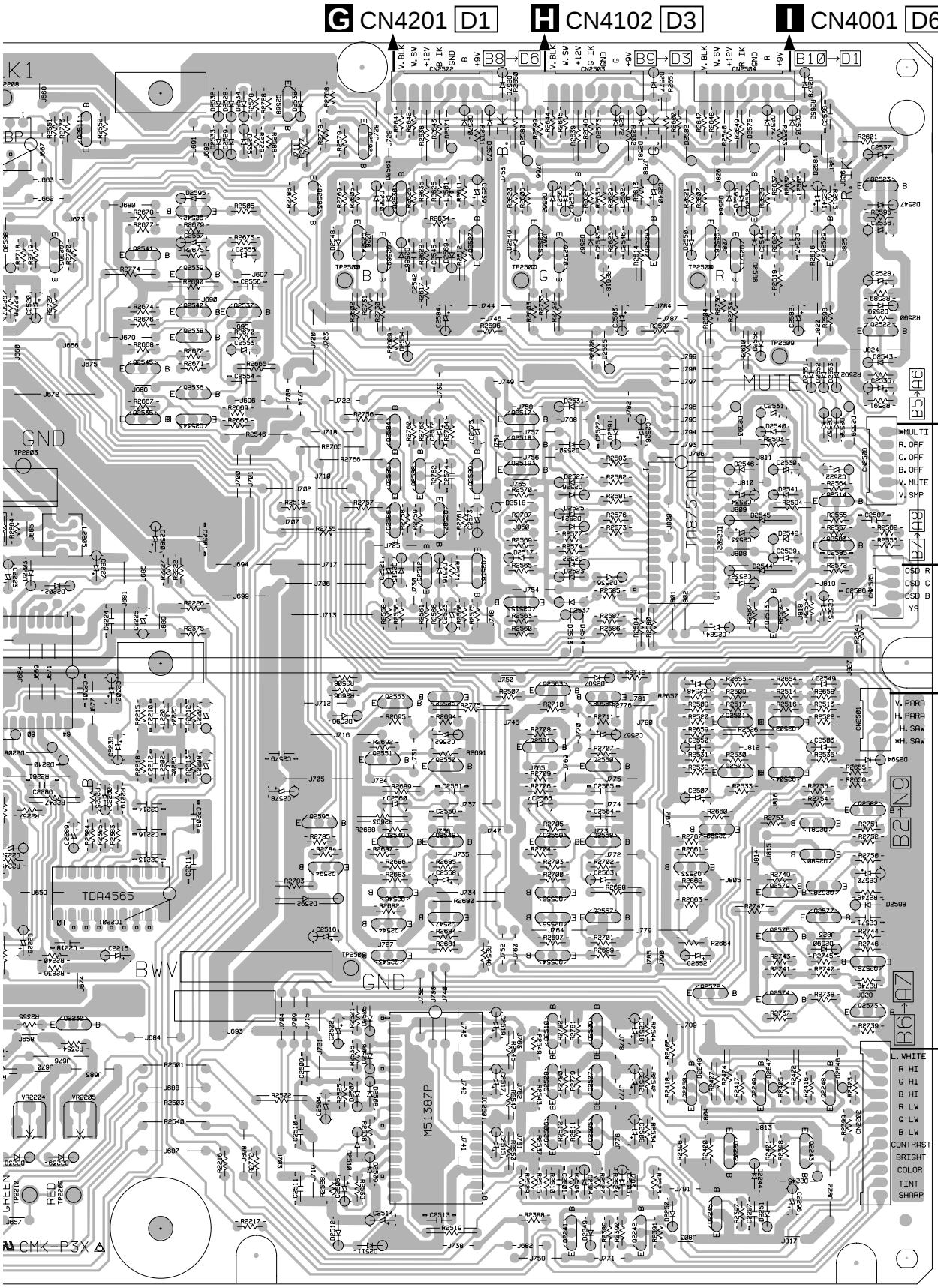
4.4 VIDEO ASSY

B VIDEO ASSY



VR2202 VR2201 VR2203-VR2

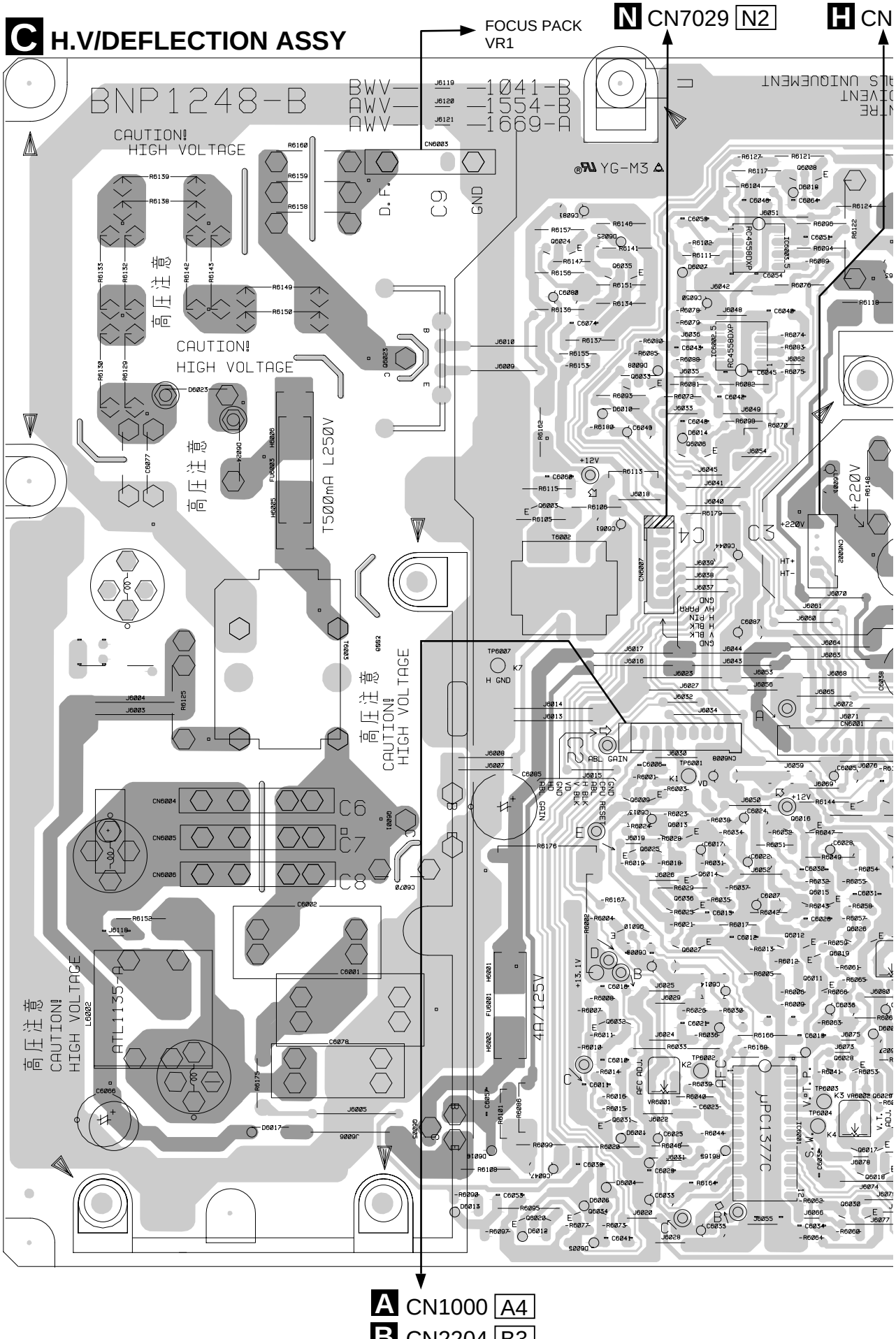
Q2015-Q2020 Q2009 Q2003 Q2004 Q2021 Q2205 Q2211 IC2204 IC2202 IC2503 Q
IC2001 Q2005-Q2007 Q2022 Q2212 Q2251 Q22020 Q2591 Q2566 Q2564 Q
Q2008 IC2002 IC2003 Q2010-Q2013 Q2218-Q2219 Q2222-Q2229
Q2206-Q2210 Q2231-Q2233
Q2203-Q2204 Q2216 IC2203 Q2215 Q2235 Q2213-Q2214
Q2236-Q2237 Q2217 Q2221



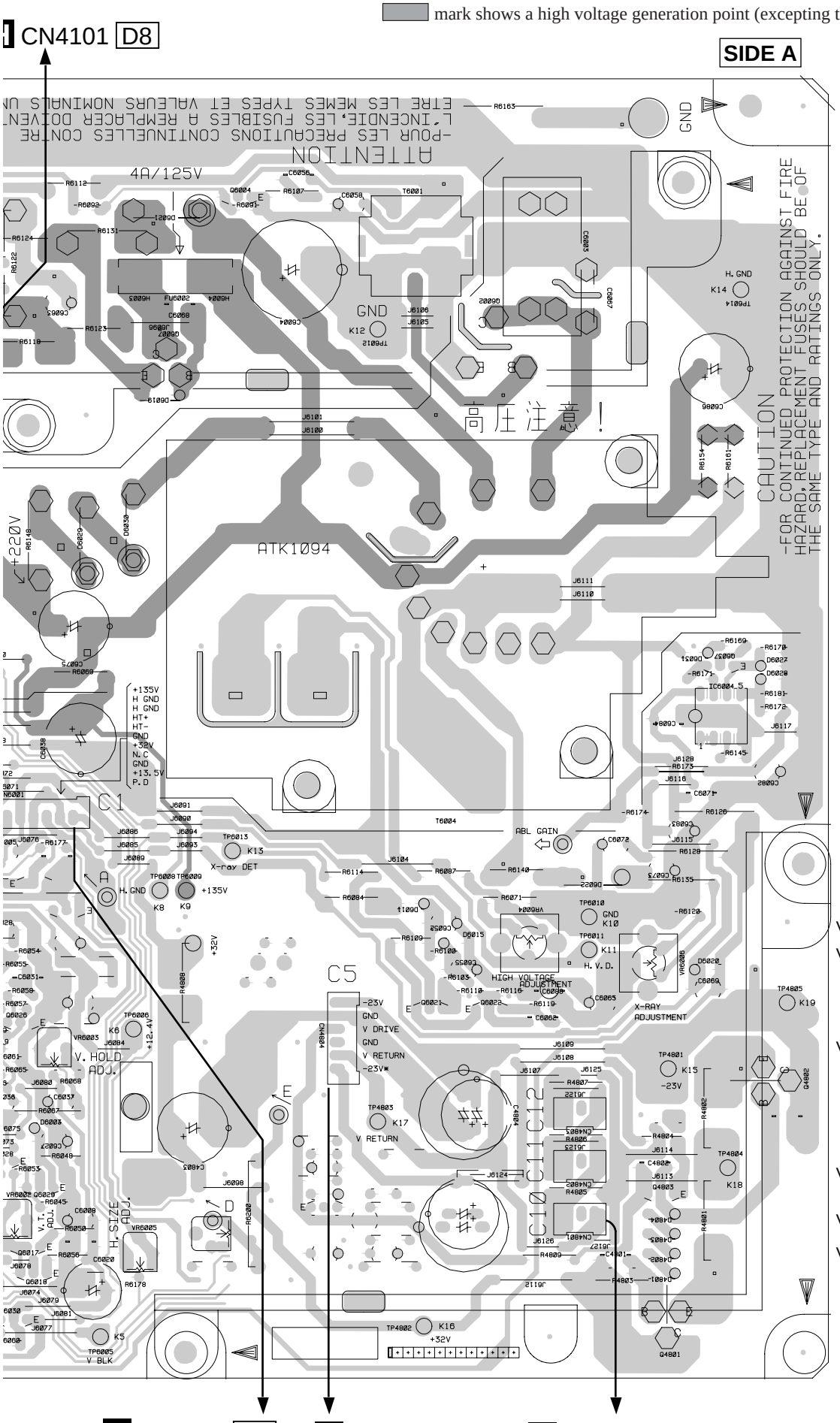
2201
2203-VR2205

503 Q2511 Q2545 Q2568 Q2524 Q2530 Q2527 Q2525 Q2570 Q2531 Q2528 Q2526 Q2523
Q2564 Q2567 Q2565 Q2534-Q2542 Q2593 Q2592 Q2569 Q2512 Q2515 IC2502 Q2532 Q2522
IC2201 Q2546-Q2553 Q2516-Q2519 Q2533 Q2529
Q2230 Q2594-Q2595 IC2501 Q2554-Q2563 Q2590 Q2571 Q2513 Q2514
Q2543-Q2544 Q2505-Q2510 Q2250 Q2501-Q2504 Q2583
Q2241-Q2242 Q2245 Q2202 Q2573-Q2582
Q2243 Q2248

4.5 H.V/DEFLECTION ASSY



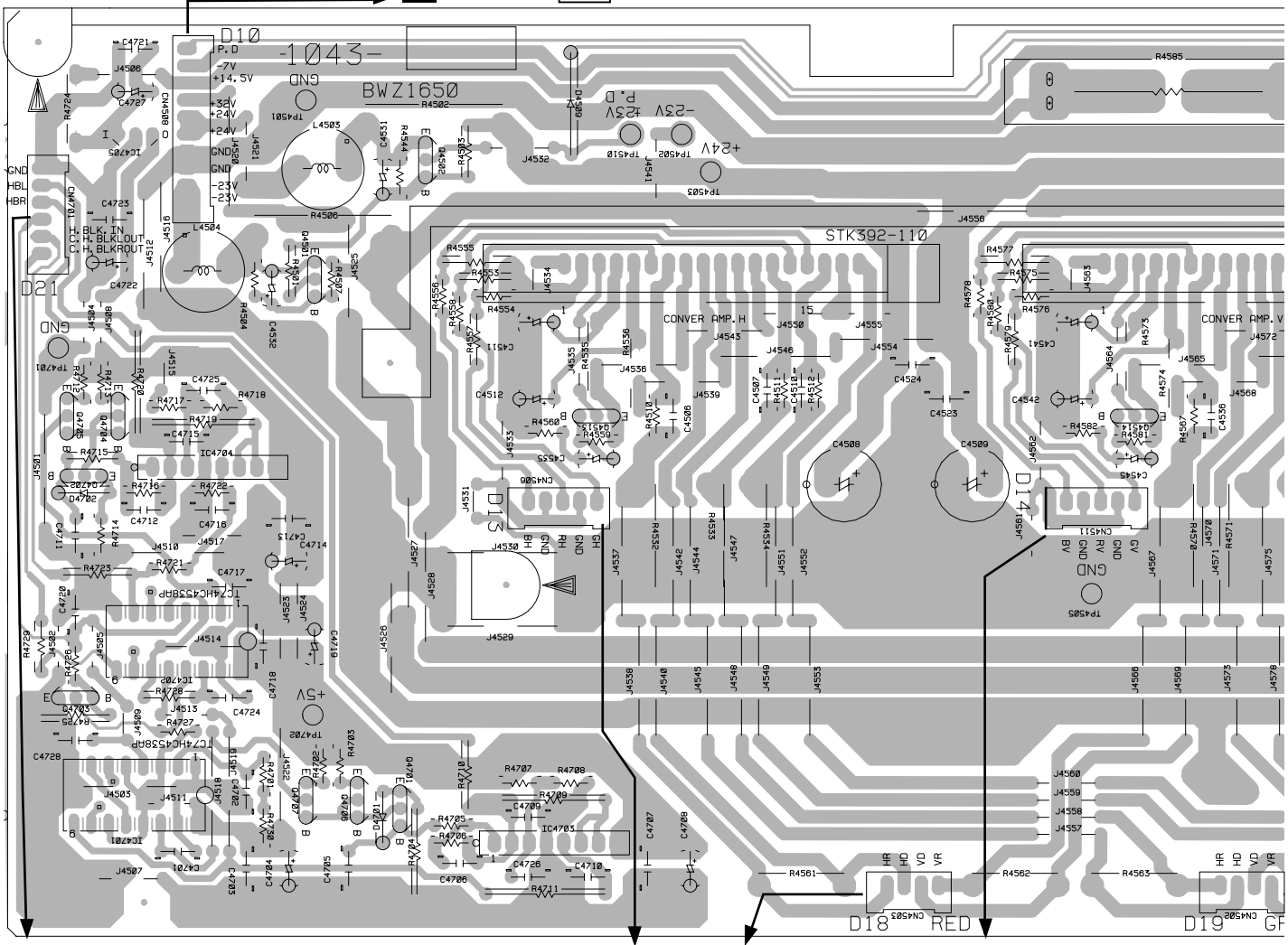
mark shows a high voltage generation point (excepting the charged section).



4.6 CONV. AMP ASSY

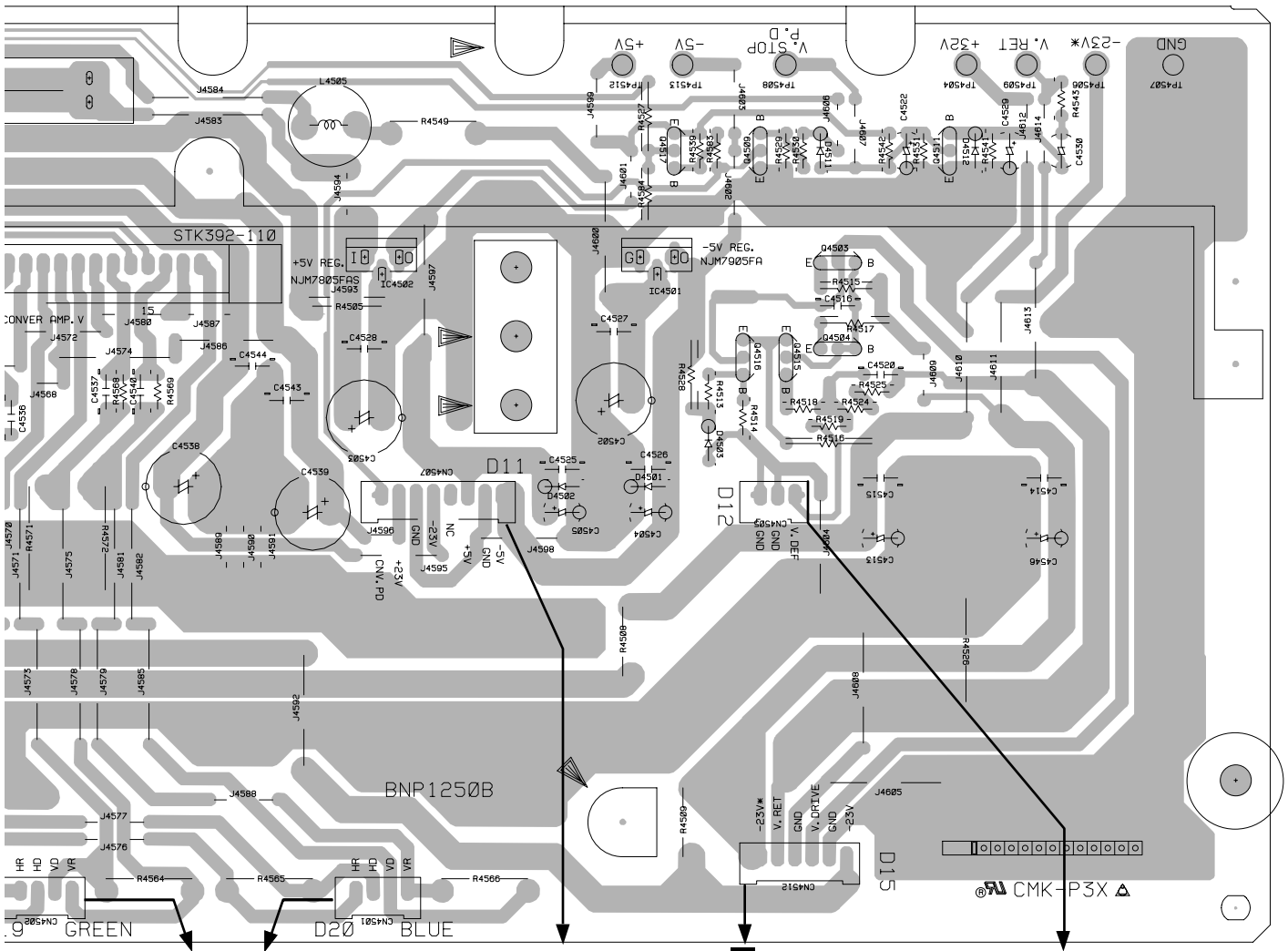
D CONV.AMP ASSY

E CN5003 E4



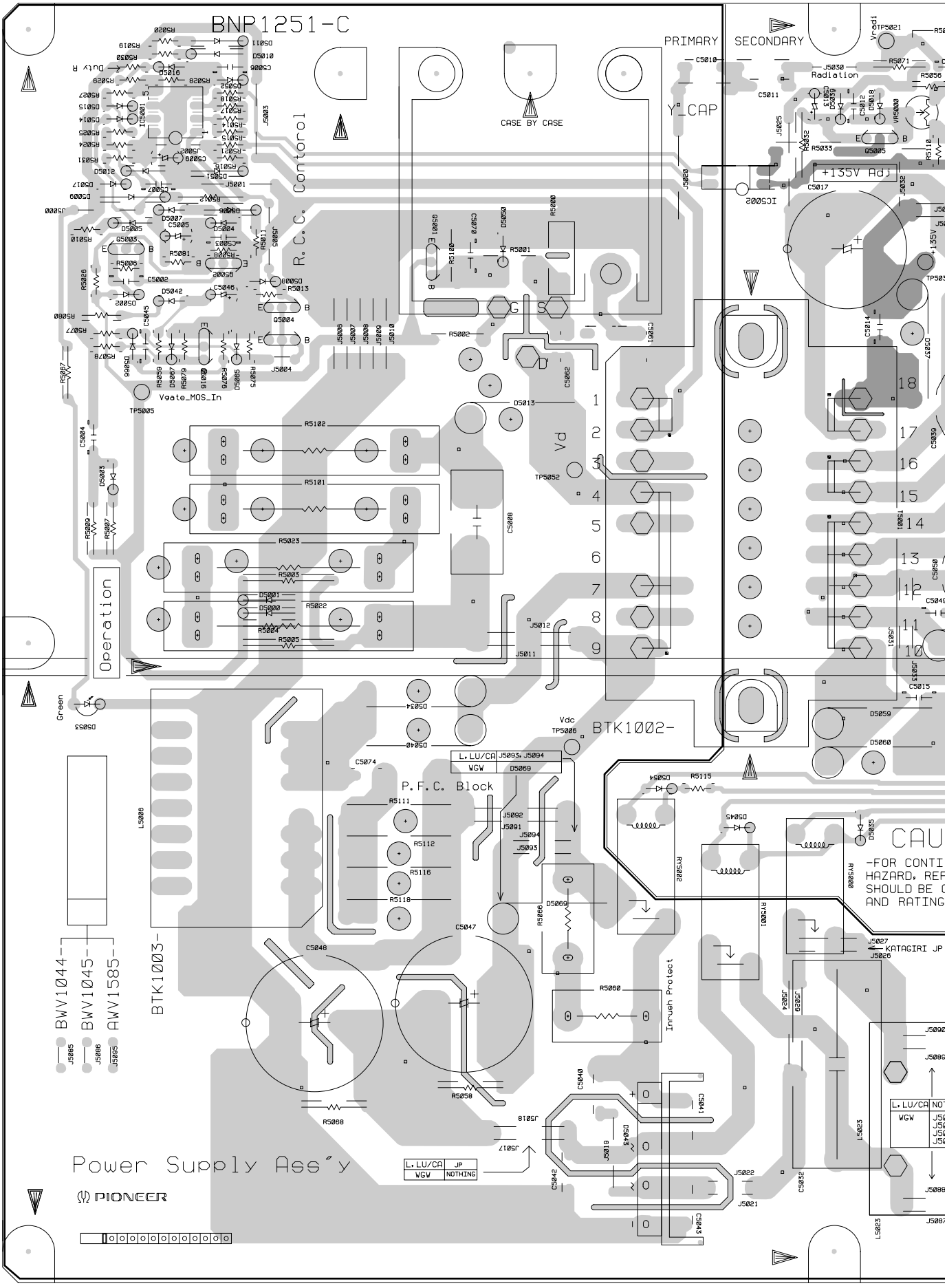
N CN7215 N13 **N** CN7213 N10 **L** CN8005 U1 **N** CN7214 N11 **L** CN

SIDE A

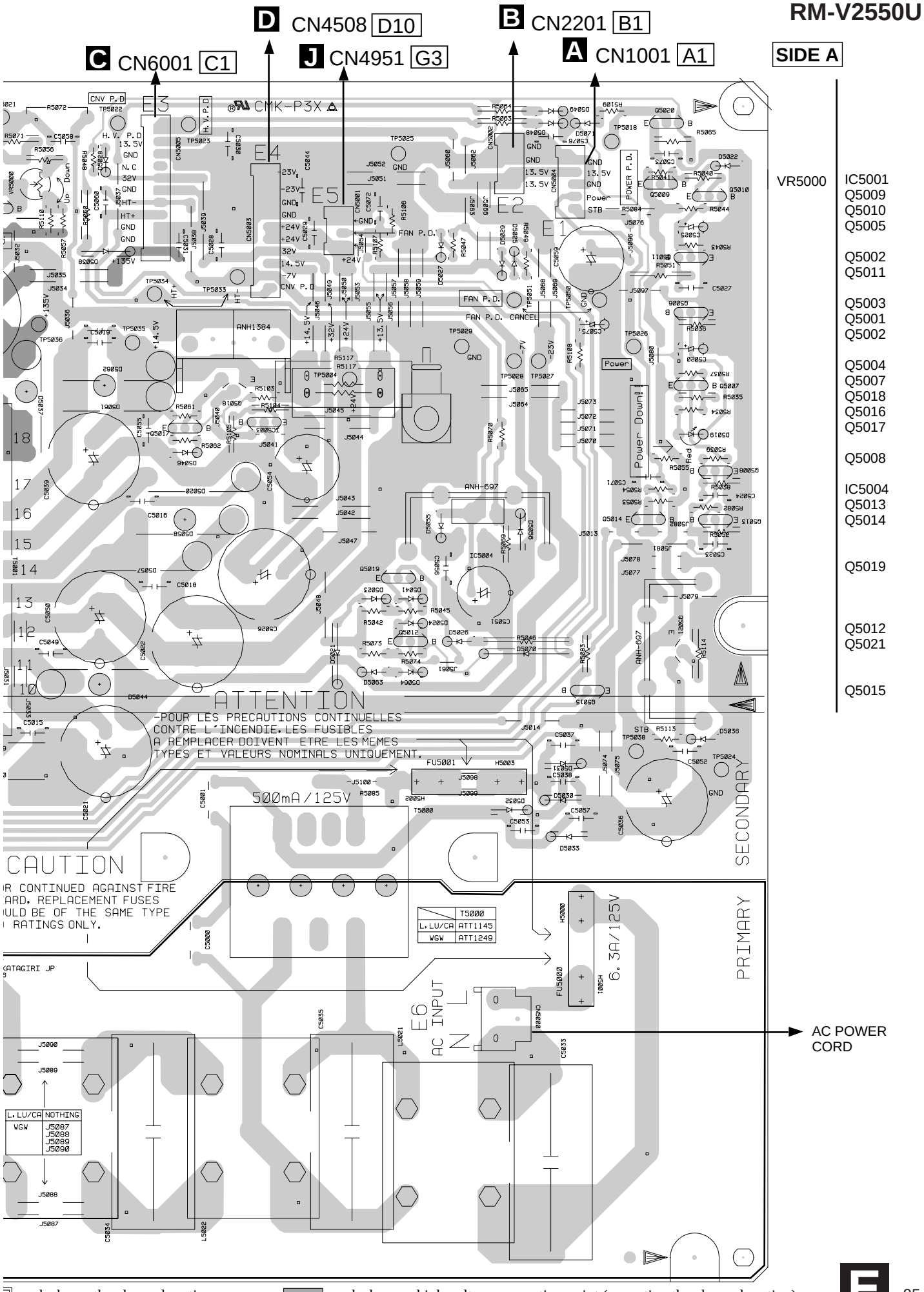

STK392-110
+5V REG.
NJM7805FAS
IC4502
-5V REG.
NJM7905FA
IC4501
BNP1250B
CMK-P3X
D11
D12
D15
D20
GREEN
BLUE
+5V
-5V
P.STOP
V.RET
GND
L CN8005 U1
L CN8005 U1
N CN7216 N8
C 1/2 CN4804 C10
N CN7220 N3
IC4502
Q4517
IC4501
Q4509 Q4503
IC4516 Q4504
Q4515
Q4511

4.7 POWER SUPPLY ASSY

E POWER SUPPLY ASSY



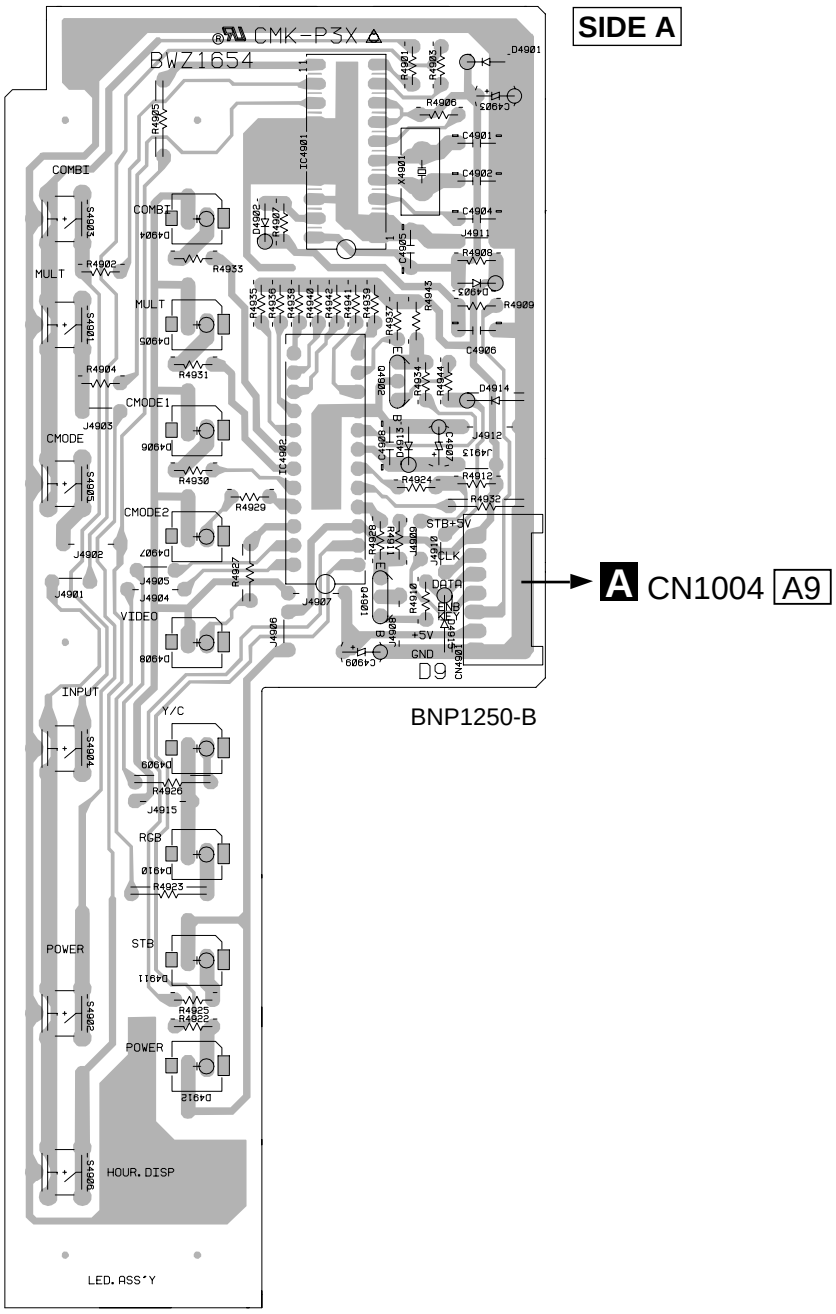
mark s



] mark shows the charged section. mark shows a high voltage generation point (excepting the charged section).

4.8 REAR LED ASSY

F REAR LED ASSY

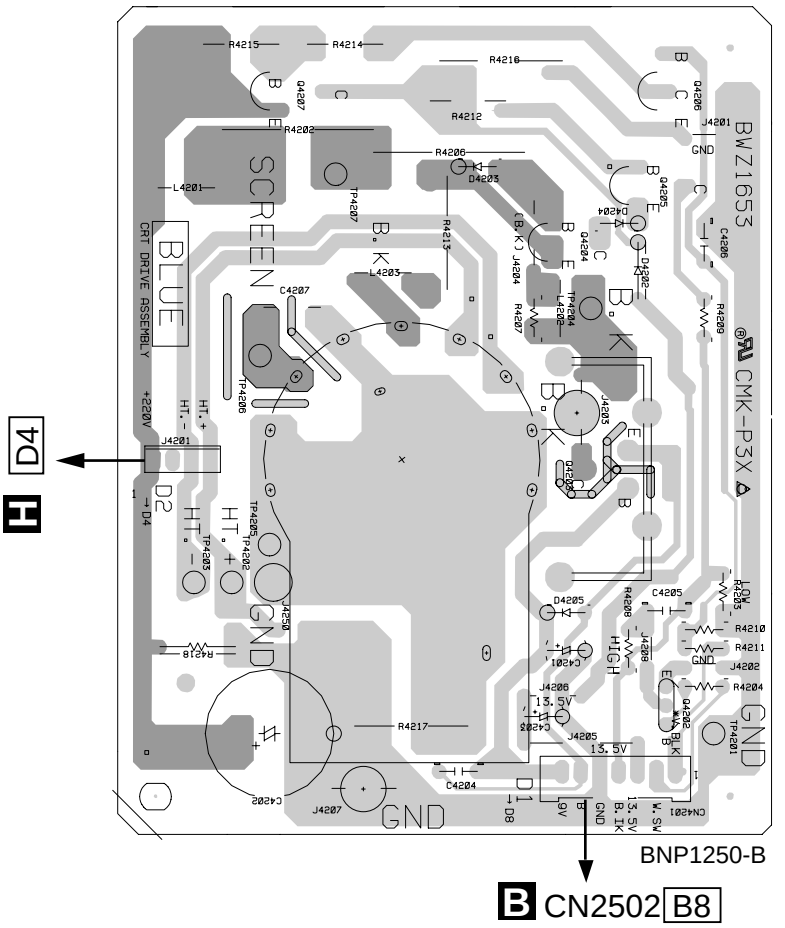


4.9 B CRT DRIVE ASSY

G B CRT DRIVE ASSY

Q4206

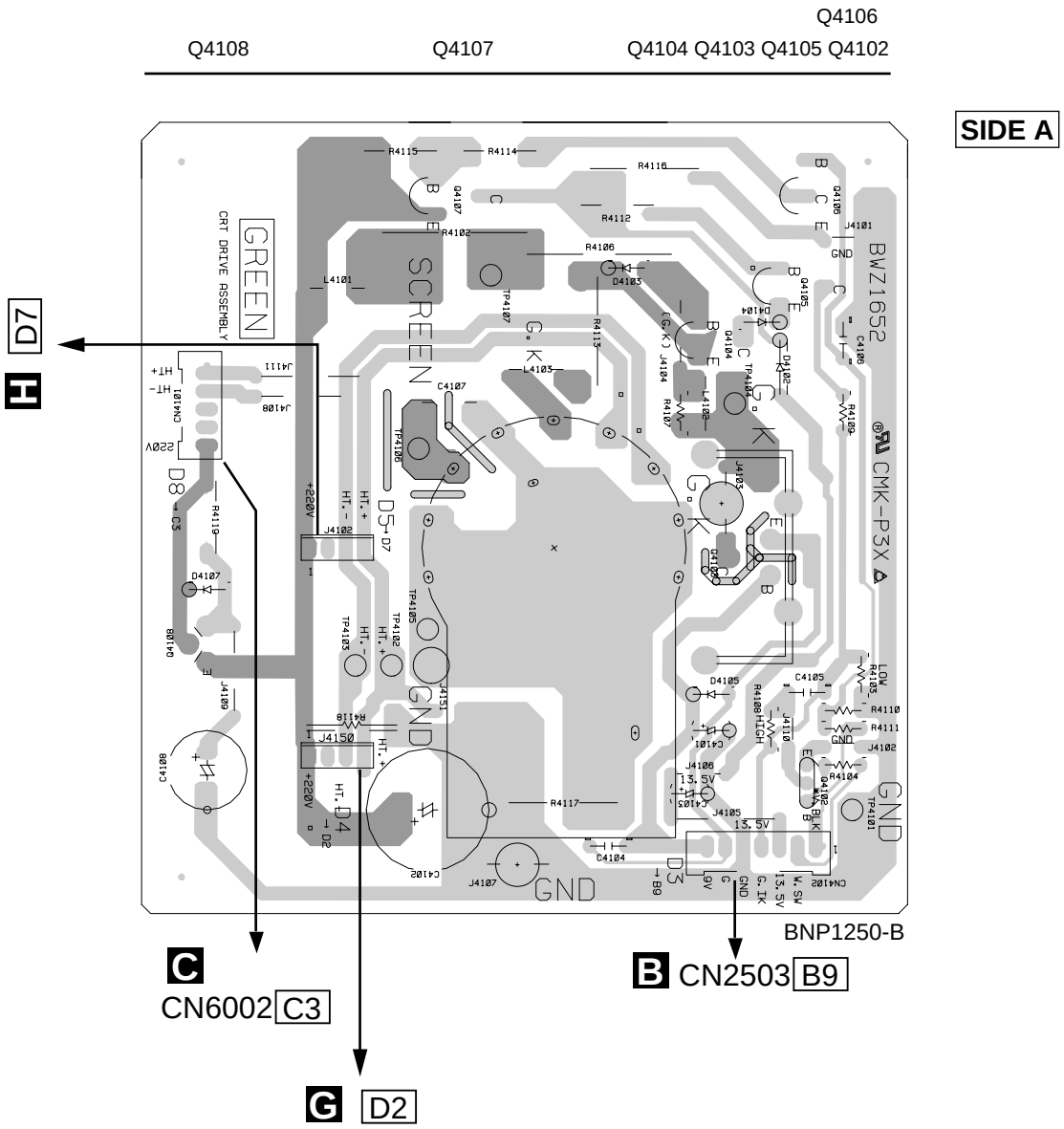
Q4207 Q4204 Q4203 Q4205 Q4202



mark shows a high voltage generation point (excepting the charged section).

4.10 G CRT DRIVE ASSY

H G CRT DRIVE ASSY



mark shows a high voltage generation point (excepting the charged section).

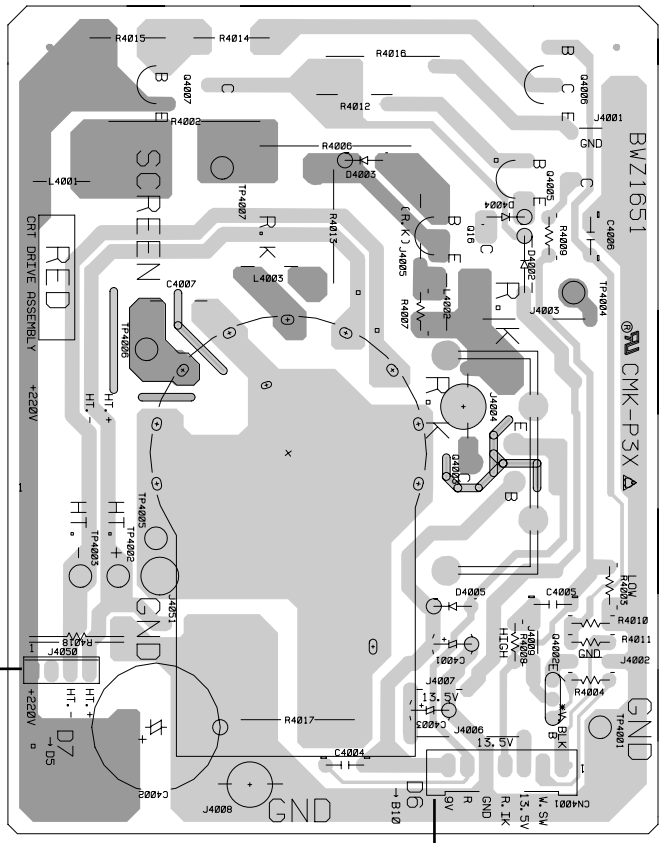
4.11 R CRT DRIVE ASSY

I R CRT DRIVE ASSY

Q4006

Q4007 Q16 Q4003 Q4005 Q4002

SIDE A



H D5

B CN2504 B10

BNP1250-B

mark shows a high voltage generation point (excepting the charged section).

4.12 CONVERGENCE ASSY

N CONVERGENCE ASSY

C CN6007 C4

D CN4507 D11

T CN3251

D CN4511 D14

P CN3051

A CN1002 A3

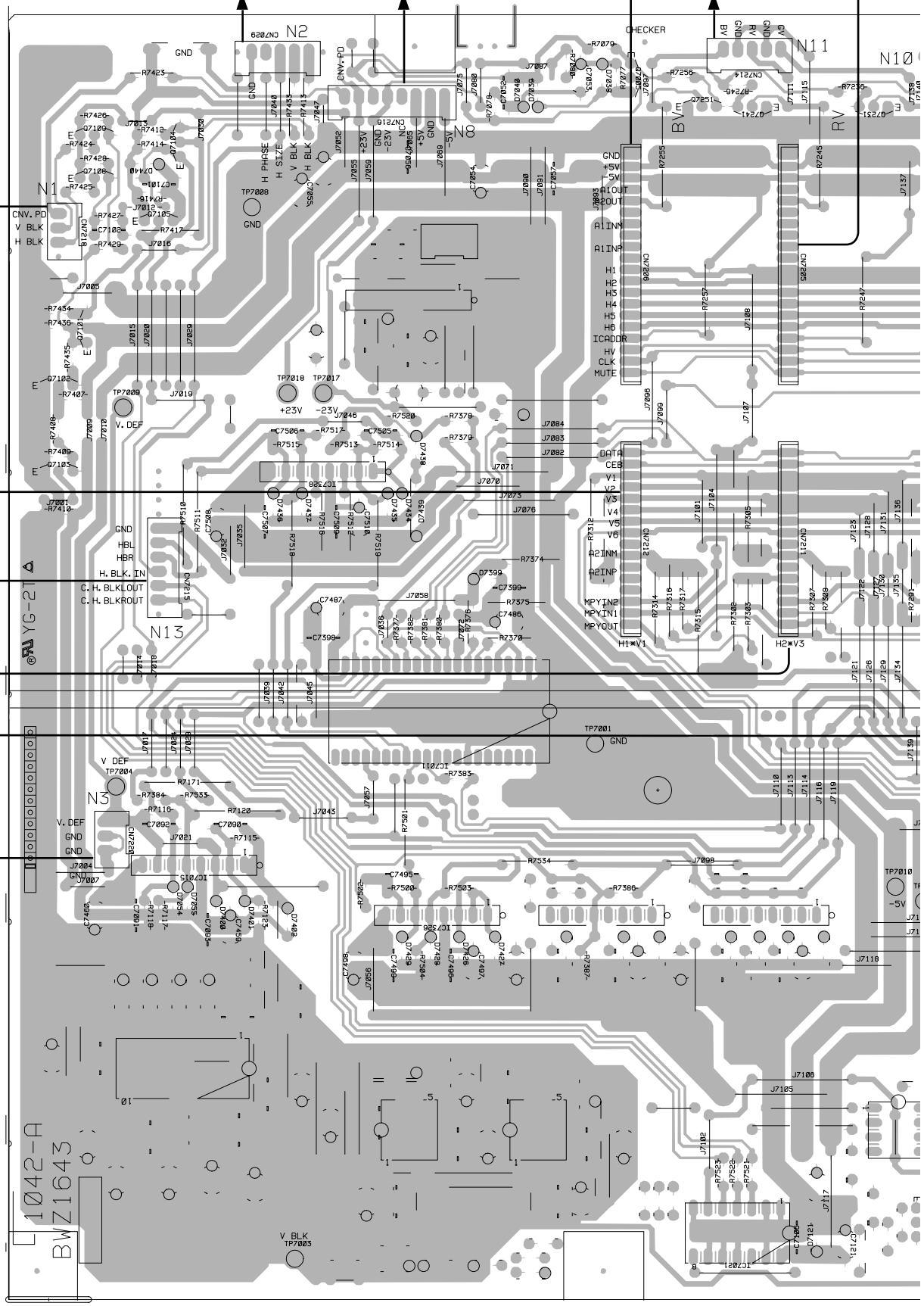
T CN3252

D CN4701 D21

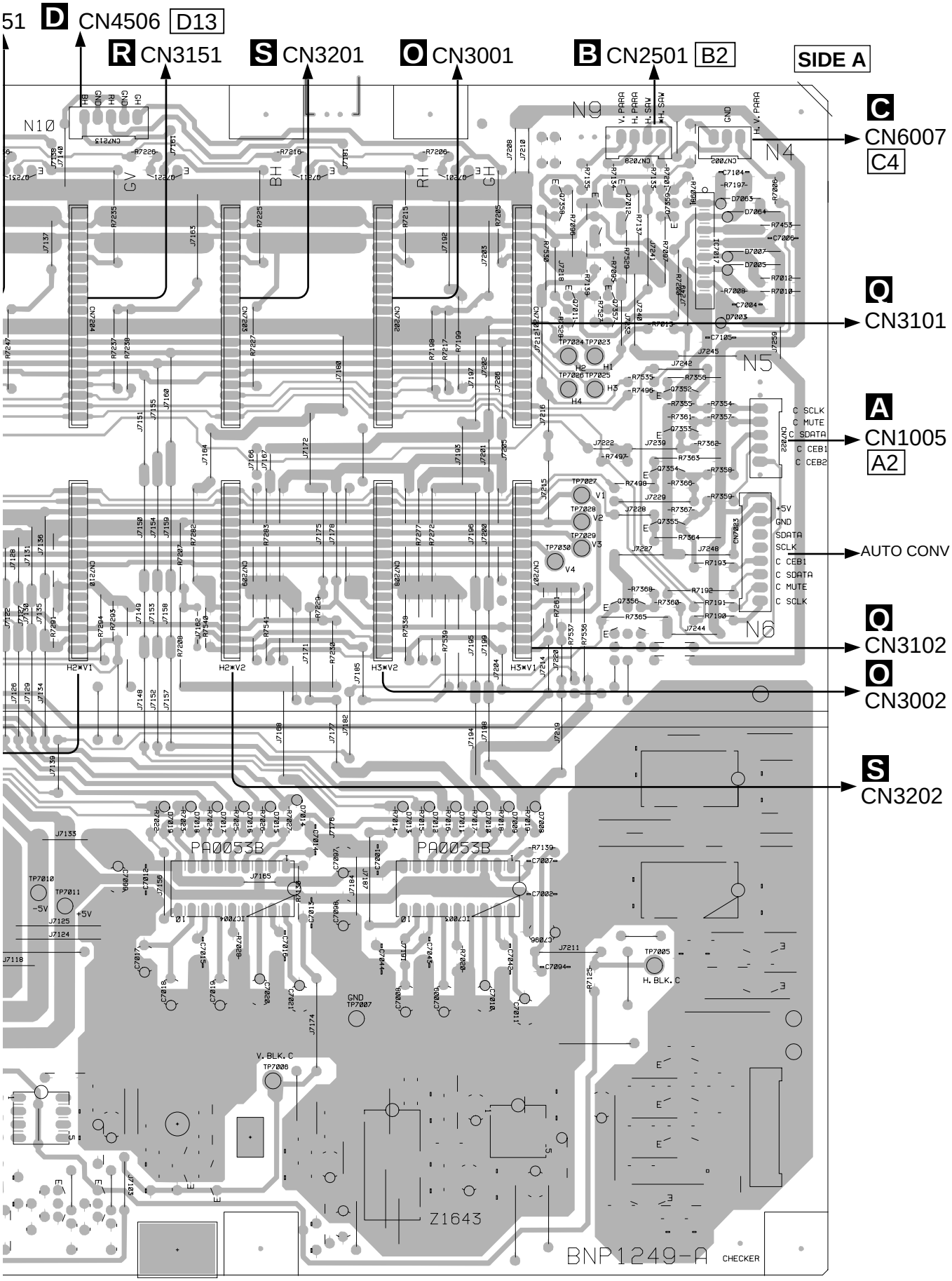
P CN3052

R CN3152

D CN4505 D12



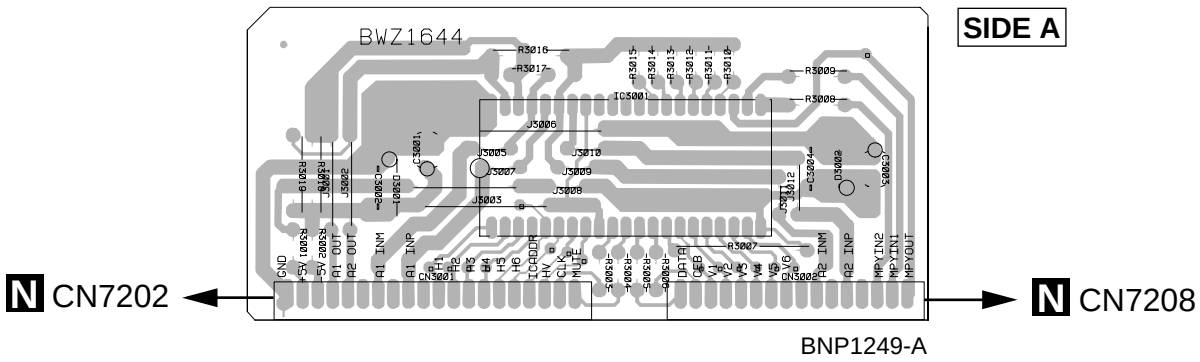
Q7109 Q7108 IC7015 IC7328 IC7011 IC7326 Q7251 Q7241 IC7021 Q7231



Q7231 Q7221 Q7211 Q7201 Q7358 Q7012 Q7359
IC7004 IC7003 Q7011 Q7353
Q2352 - Q2356

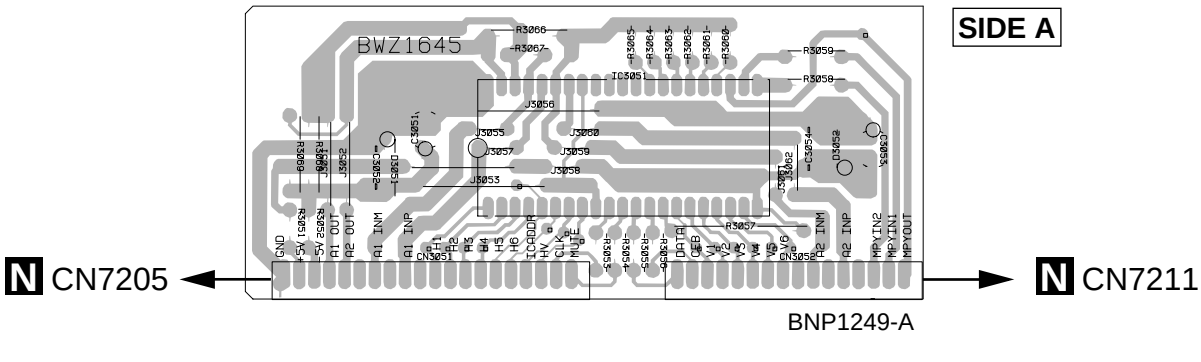
4.13 CONV. MODULE(RH),(RV),(GH)

O CONV MODULE(RH) ASSY



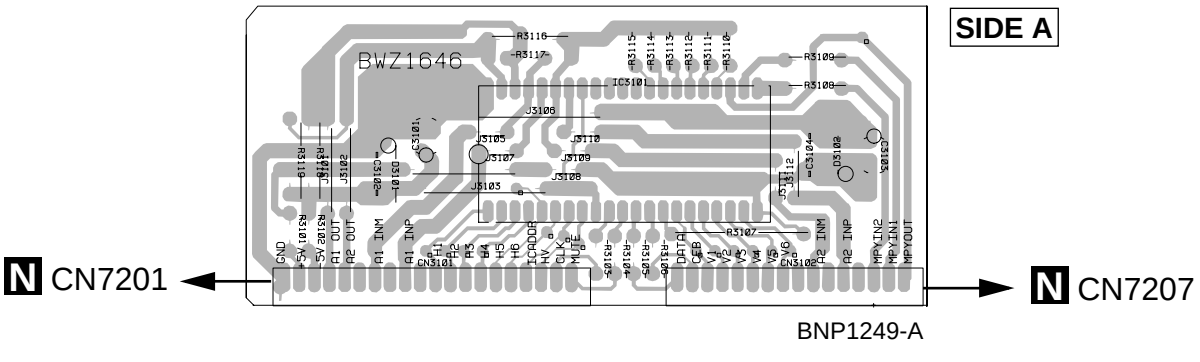
BNP1249-A

P CONV MODULE(RV) ASSY



BNP1249-A

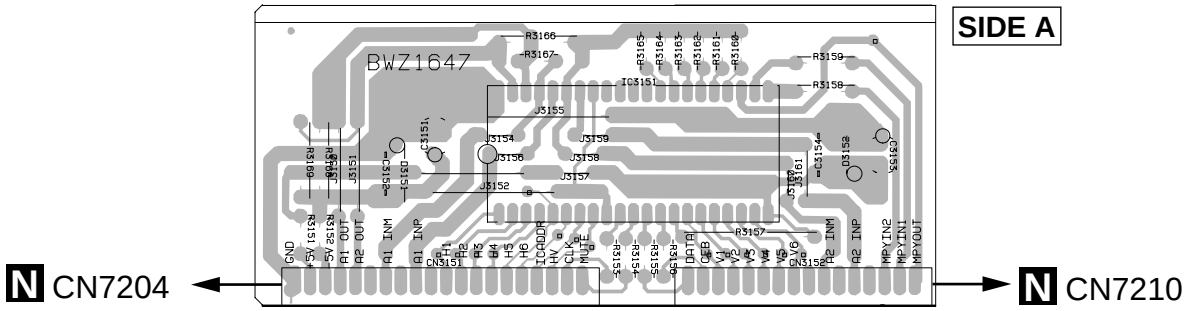
Q CONV MODULE(GH) ASSY



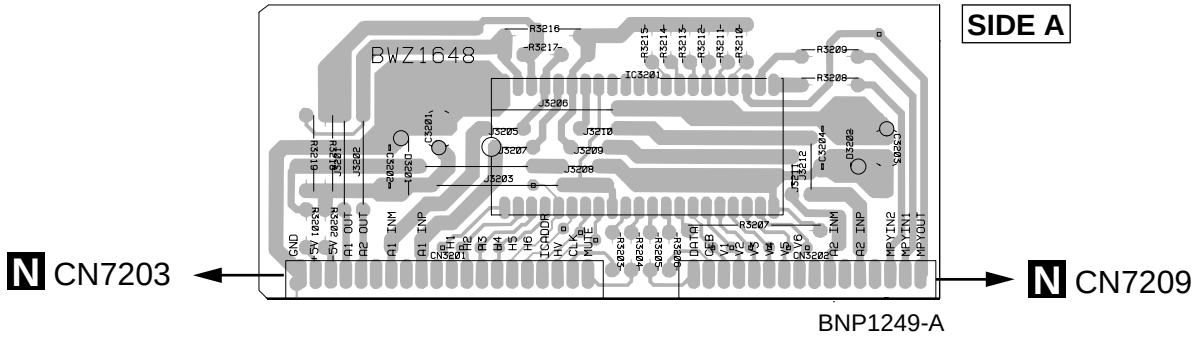
BNP1249-A

4.14 CONV. MODULE(GV),(BH),(BV)

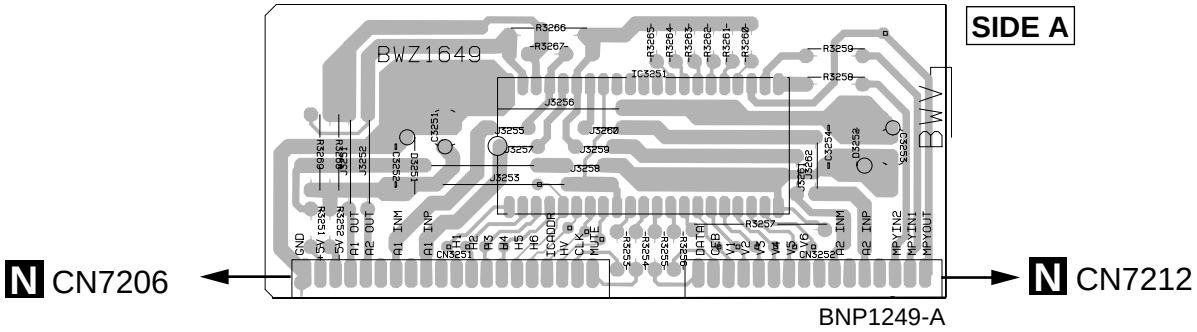
R CONV MODULE(GV) ASSY



S CONV MODULE(BH) ASSY



T CONV MODULE(BV) ASSY



5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560	→	*56 x 10^1*	→	*561* ····· *RD1/4PU 5 6 1 J*
47k	→	*47 x 10^3*	→	*473* ····· *RD1/4PU 4 7 3 J*
0.5	→	*R50*		····· *RN2H R 5 0 K*
1	→	*1R0*		····· *RS1P 1 R 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k	→	*562 x 10^1*	→	*5621* ····· *RN1/4PC 5 6 2 1 F*

● *Parts marked by ☆are important parts which relate in X-rays radiation. If any of these parts need to be replaced, always replace with specified parts.*
● *Parts marked by "×" are important parts which relate in X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself.*
If any part marked by is replace, there is danger of being exposed to X-rays.

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
		CONTROL ASSY	AWV1667
NSP		YOKE CONNECTION ASSY	AWV1668
		├─YOKE CONNECTION ASSY A	AWZ6280
		├─FAN CONNECTION A ASSY	AWZ6281
		├─FAN CONNECTION B ASSY	AWZ6282
		└─YOKE CONNECTION ASSY B	AWZ6308
		H.V/DEFLECTION ASSY	AWV1669
		VIDEO ASSY	AWV1670
NSP		COMPLEX ASSY	AWV1671
		├─REAR LED ASSY	AWZ6284
		├─CONV. AMP ASSY	AWZ6294
		├─R CRT DRIVE ASSY	BWZ1651
		├─G CRT DRIVE ASSY	BWZ1652
		└─B CRT DRIVE ASSY	BWZ1653
NSP		CONVERGENCE ASSY	AWV1672
		├─CONVERGENCE ASSY	AWZ6285
		├─CONV. MODULE (RH) ASSY	BWZ1644
		├─CONV. MODULE (RV) ASSY	BWZ1645
		├─CONV. MODULE (GH) ASSY	BWZ1646
		├─CONV. MODULE (GV) ASSY	BWZ1647
		├─CONV. MODULE (BH) ASSY	BWZ1648
		└─CONV. MODULE (BV) ASSY	BWZ1649
		POWER SUPPLY ASSY	BWV1044

A CONTROL ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC1002		25LC160
	IC1004		M62358P
	IC1005		MC145407P
	IC1000		MC34064P
	IC1007		NJM78M05FA
	IC1001		PD5461A
	IC1006		TC4011BP
	IC1008,IC1701-IC1703		TC4053BP
	IC1003		UPD6453CY-001
	Q1002 ,Q1006 ,Q1013 ,Q1018		2SA1048
	Q1021 ,Q1022 ,Q1024 ,Q1026 ,Q1027		2SA1048
	Q1057 -Q1059 ,Q1067 -Q1077 ,Q1079		2SA1048
	Q1081 ,Q1085 -Q1090 ,Q1093 ,Q1095		2SA1048
	Q1098 -Q1100 ,Q1104 -Q1106 ,Q1108		2SA1048
	Q1703 ,Q1707 ,Q1711 ,Q1724 ,Q1729		2SA1048
	Q1735 ,Q1736 ,Q1738 ,Q1739		2SA1048
	Q1000 ,Q1001 ,Q1003 -Q1005 ,Q1007		2SC2458
	Q1009 -Q1012 ,Q1014 -Q1017		2SC2458
	Q1019 ,Q1020 ,Q1023 ,Q1025		2SC2458
	Q1029 -Q1042 ,Q1054 -Q1056		2SC2458
	Q1060 -Q1066 ,Q1078 ,Q1080		2SC2458
	Q1082 -Q1084 ,Q1091 ,Q1092 ,Q1094		2SC2458
	Q1096 ,Q1097 ,Q1101 -Q1103 ,Q1107		2SC2458
	Q1701 ,Q1702 ,Q1704 -Q1706		2SC2458
	Q1708 -Q1710 ,Q1712 -Q1723		2SC2458
	Q1725 -Q1728 ,Q1730 -Q1733 ,Q1740		2SC2458
	Q1028 ,Q1043 -Q1053		2SC3327
	Q1008		2SD880
	D1001 -D1006 ,D1008 ,D1043		HSS104-02
	D1051 -D1053 ,D1055 ,D1059		HSS104-02
	D1063 ,D1064 ,D1087 ,D1092 ,D1093		HSS104-02
	D1096 ,D1701 -D1709 ,D1712		HSS104-02
	D1056 ,D1072 -D1079 ,D1086 ,D1111		RD15ESB
	D1710 ,D1711 ,D1713 -D1716		RD15ESB
	D1094		RD3.0ESB
	D1107 -D1109		RD4.7ESB1
	D1007 ,D1011 ,D1058		RD5.1ESB2
	D1009 ,D1010 ,D1012 -D1042		RD5.6ESB
	D1044 -D1050 ,D1057 ,D1060		RD5.6ESB
	D1080 -D1082 ,D1085 ,D1095		RD5.6ESB
	D1097 ,D1098 ,D1101 ,D1110		RD5.6ESB
	D1061 ,D1099 ,D1100 ,D1102		RD6.8ESB
	D1105 ,D1106		RD6.8ESB
	D1103 ,D1104		RD8.2ESB

Mark	No.	Description	Part No.
COILS AND FILTERS			
	L1704		ATG1006
	L1712		ATG1008
	DL1702		ATN1011
	DL1701		ATN1013
	L1000 -L1002		LAU100J
	L1702		LAU150J
	L1701		LAU150K
	L1706		LAU1R8J
	L1003		LAU270J
	L1004		LAU2R2J
	L1705 ,L1707 ,L1710		LAU3R9K
	L1703 ,L1708		LAU470K
	L1713		LAU820K
	L1709 ,L1711		LAU8R2K
SWITCHES AND RELAYS			
	S1000		ASH1003
	S1701		ASH1015
	RY1000		RSR1029
CAPACITORS			
	TC1000 (5.2pF-30pF)		ACM-017
	C1022 ,C1742		CCCCH101J50
	C1710 ,C1727 ,C1728		CCCCH151J50
	C1713 ,C1726		CCCCH181J50
	C1014 ,C1015		CCCCH220J50
	C1048 ,C1049 ,C1052 ,C1063 ,C1714		CCCCH221J50
	C1717		CCCCH221J50
	C1044 -C1047		CCCCH271J50
	C1708		CCCCH330J50
	C1749		CCCCH470J50
	C1016 ,C1020 ,C1032 -C1034 ,C1036		CEAS100M50
	C1051 ,C1086 ,C1704		CEAS100M50
	C1007 ,C1012 ,C1709		CEAS101M10
	C1023 ,C1055 -C1057 ,C1729 ,C1739		CEAS101M25
	C1745		CEAS101M50
	C1002 ,C1003 ,C1006		CEAS1R0M50
	C1737		CEAS221M16
	C1009 ,C1061		CEAS221M25
	C1004		CEAS222M16
	C1720		CEAS330M25
	C1060 ,C1072		CEAS330M50
	C1000 ,C1013 ,C1017 ,C1024 ,C1028		CEAS470M25
	C1030 ,C1039 ,C1040 ,C1043 ,C1050		CEAS470M25
	C1053 ,C1058 ,C1064 ,C1069 ,C1073		CEAS470M25
	C1078 ,C1082 ,C1701 ,C1707 ,C1716		CEAS470M25
	C1718 ,C1724 ,C1732 ,C1741		CEAS470M25
	C1733		CEAS471M16
	C1070 ,C1711		CEASR47M50
	C1071		CEASR68M50
	C1081		CFTXA473J50
	C1703 ,C1705 ,C1712 ,C1719 ,C1725		CGCYX103M25
	C1730 ,C1740 ,C1743 ,C1744		CGCYX103M25
	C1734		CGCYX104M25
	C1025 ,C1706		CKCYB102K50
	C1005 ,C1008 ,C1010 ,C1011		CKCYB103K50
	C1018 ,C1019 ,C1021 ,C1026 ,C1027		CKCYB103K50
	C1029 ,C1031 ,C1035 ,C1037 ,C1038		CKCYB103K50
	C1041 ,C1042 ,C1054 ,C1059 ,C1062		CKCYB103K50
	C1065 -C1068 ,C1074 ,C1076 ,C1077		CKCYB103K50
	C1079 ,C1080 ,C1087 ,C1088 ,C1702		CKCYB103K50
	C1715 ,C1721 ,C1722 ,C1747 ,C1748		CKCYB103K50
	C1001 ,C1075		CKCYB472K50
	C1723 ,C1731 ,C1735 ,C1736 ,C1738		CKCYF103Z50
	C1746		CKCYF103Z50
RESISTORS			
	R1809		RD1/2LMF2R2J
	R1264		RD1/2LMF561J
	R1785		RD1/2PM470J
	R1109		RN1/4PC1001F
	R1431		RN1/4PC3301F
	R1430		RN1/4PC6801F
	R1114		RS1LMF100J
	R1134		RS1LMF220J
	VR1701 (1KΩ)		ACP1040
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN1009	JACK	AKN-207
	CN1010,CN1011	SOCKET (6P DIN)	AKP1117
	1701-1705	BNC SOCKET	AKX1002
		HEAT SINK M	ANH-697
	X1001	(9.8304MHz)	ASS1127
	CN1006	SOCKET (25P D-SUB)	BKP1055
	CN1003,CN1701	PLUG 12-P	KM250MA12
	CN1002	PLUG 3-P	KM250MA3
	CN1000	PLUG 4-P	KM250MA4
	CN1007	PLUG 4-P	KM250MA4R
	CN1001,CN1005	PLUG 5-P	KM250MA5
	CN1008	PLUG 6-P	KM250MA6
	CN1004	PLUG 7-P	KM250MA7
		SCREW	PBZ30P080FMC

L YOKE CONNECTION ASSY A

Mark	No.	Description	Part No.
RESISTORS			
	R8001 -R8003		RD1/2LMF101J
OTHERS			
	CN8005	PLUG 12-P	KM250MA12
	CN8006-CN8008	PLUG 3-P	KM250MA3
	CN8001	PLUG 3-P	KM250MA3R
	CN8002	PLUG 4-P	KM250MA4
	CN8003	PLUG 4-P	KM250MA4B
	CN8004	PLUG 4-P	KM250MA4R

J FAN CONNECTION ASSY A

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	Q4950 ,Q4951		2SC2458
	D4951 ,D4952		HSS104-02
CAPACITORS			
	C4950		CEAS101M35
	C4951		CKDYF103Z50
RESISTORS			
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN4950	PLUG 3-P	KM250MA3L
	CN4951	PLUG 3-P	KM250MA3LR
	CN4952	PLUG 4-P	KM250MA4LB

Mark	No.	Description	Part No.
K	**FAN CONNECTION ASSY B**		
	CAPACITORS		
	C8052		CEAS101M35
	C8051		CKDYF103Z50
	RESISTORS		
	Other Resistors		RD1/4PU□□□J
	OTHERS		
	CN8051	PLUG 3-P	KM250MA3L
	CN8053	PLUG 4-P	KM250MA4LB
M	**YOKE CONNECTION ASSY B**		
	OTHERS		
	CN8009-CN8012	PLUG 4-P	AKM1066
C	**H.V/DEFLECTION ASSY**		
	SEMICONDUCTORS		
⚠	IC6004		M5223P
⚠	IC6002,IC6003		NJM4558DXP
⚠	IC6001		UPC1377C
	Q6009 -Q6022 ,Q6024		2SA933S
	Q4802		2SB951A
	Q6025 -Q6036		2SC1740S
	Q6037		2SC1845
	Q4803		2SC2458
	Q6006 ,Q6008		2SC2705
⚠	Q6003 ,Q6004		2SC3332
⚠	Q6023		2SC4633
⚠	Q6005 ,Q6007		2SD1276A
	Q4801		2SD1277A
⚠	Q6001 ,Q6002		2SD2300
⚠	D6021		11DF2FD
⚠	D6029 ,D6030		ES1F
	D4801 -D4804 ,D6001 ,D6005 ,D6006		HSS104-02
	D6008 ,D6010 -D6014 ,D6016		HSS104-02
	D6018 -D6020 ,D6025 ,D6027 ,D6031		HSS104-02
	D6003		HZS6B1L
	D6028		RD12ESB
	D6007		RD5.1ESB2
×	D6015 RD5.1ESB2		
⚠	D6023 ,D6024		RP1H
⚠	D6022		RU1
⚠	D6004 ,D6017		S5688G
	COILS AND FILTERS		
⚠	T6001 ,T6002		ATK1045
⚠	T6003		ATK1050
⚠ ×	T6004		ATK1094
⚠	L6002		ATL1135
	L6003		ATX1023
	L6001		LTA272J
	CAPACITORS		
	C6077	(4700pF/2kV)	ACG-035
	C6067 ,C6070	(680pF/2kV)	ACG1024
	C6038	(33µF/160V)	ACH-370
	C6066	(1µF/160V)	ACH-372
	C6004	(10µF/160V)	ACH1117
	C6026		CCCSL101J50
	C6048 ,C6057 ,C6064 ,C6068		CCCSL101K2H
	C6041		CCDSL271J50
	C6069		CEANP4R7M35
	C6035		CEAS221M16
	C6005 ,C6025 ,C6073 ,C6082		CEHAQ100M50
	C6044 ,C6080 ,C6081		CEHAQ101M25
	C6087		CEHAQ101M50
	C6047 ,C6063		CEHAQ1R0M2C
	C6013 ,C6014 ,C6017 ,C6022 ,C6024		CEHAQ1R0M50
	C6027 ,C6028 ,C6036 ,C6037		CEHAQ1R0M50
	C6049 ,C6050 ,C6058 ,C6061		CEHAQ1R0M50
	C6072		CEHAQ220M50
	C6065		CEHAQ221M16
	C6033 ,C6055		CEHAQ330M25
	C6008 ,C6020 ,C6052		CEHAQ331M16
	C6007 ,C6083		CEHAQ470M25
	C6075 ,C6085 ,C6086		CEHAQ470M2C
	C4803 ,C4804		CEHAQ471M50
⚠	C6002		CFPHW103H3D
⚠	C6003		CFPHW123H3D
⚠	C6001		CFPHW683J3A
⚠	C6078		CFPMW474J2D
	C6032		CFTXA474J50
	C6016		CGCYX104M25
	C6060		CKCYB102K2H
	C4801		CKCYB102K50
	C4802 ,C6040		CKCYB222K50
	C6006		CKCYB331K50
	C6056		CKCYE472P2H
	C6019 ,C6046 ,C6062 ,C6084		CKCYF103Z50
⚠	C6088		CKCYF103Z50
	C6042 ,C6045 ,C6054		CKCYF473Z50
	C6029		CKDYF103Z50
	C6034		CQHA333J50
	C6051 ,C6059		CQMA102J50
	C6043		CQMA103J50
	C6039		CQMA103K2E
	C6030		CQMA104J50
	C6031		CQMA153J50
	C6011 ,C6074		CQMA183J50
	C6053		CQMA223J50
	C6021		CQMA472J50
	C6010 ,C6071		CQMA473J50
	C6012		CQMA682J50
	C6009		CQMA683J50
	C6015		CQMA823J50
⚠	C6023		CQPA562G2A
	RESISTORS		
⚠	R6163	(47Ω/0.5W)	ACN-225
⚠	R6158 -R6160	(100kΩ/0.5W)	ACN1074
	R6112		RD1/2LMF100J
	R6162		RD1/2LMF101J
	R6113		RD1/2LMF102J
	R6175		RD1/2LMF103J
	R6140		RD1/2LMF2R2J
	R6070 ,R6084		RD1/2LMF3R9J
	R6069		RD1/2LMF470J
	R6101 ,R6123		RD1/2LMF471J

Mark	No.	Description	Part No.
	R4803 ,R6118		RD1/2LMF472J
	R6086		RD1/2LMF682J
	R6152		RD1/2PM102J
	R6126		RD1/2PM122J
	R6099		RD1/2PM153J
	R6121		RD1/2PM162J
	R6136		RD1/2PM221J
	R6107		RD1/2PM222J
	R6137		RD1/2PM241J
	R6144		RD1/2PM470J
	R6117		RD1/2PM471J
	R6076		RD1/2PM821J
⚠	R6161		RN1/2PC3602F
⚠	R6154		RN1/2PC3902F
	R6108		RN1/2PC4702F
	R6141		RN1/2PC6800F
	R6094 ,R6182		RN1/4PC1001F
	R6068 ,R6104 ,R6156 ,R6179		RN1/4PC1002F
×	R6087		RN1/4PC1003F
	R6170		RN1/4PC1201F
	R6040 ,R6065		RN1/4PC1202F
	R6063 ,R6096		RN1/4PC1502F
	R6082 ,R6085 ,R6157 ,R6180		RN1/4PC2201F
	R6060		RN1/4PC3002F
	R6093 ,R6146		RN1/4PC3301F
	R6039 ,R6151		RN1/4PC3302F
	R6078		RN1/4PC3901F
	R6072		RN1/4PC4701F
	R4804		RN1/4PC5100F
	R6081		RN1/4PC5101F
	R6178		RN1/4PC5602F
	R6067		RN1/4PC7501F
×	R6071		RN1/4PC7502F
	R4801 ,R4802		RS2LMF1R8J
	R4808		RS2LMF2R2J
	R6130 ,R6133 ,R6139 ,R6143 ,R6149		RS2LMF563J
	R6129 ,R6132 ,R6138 ,R6142 ,R6150		RS2LMF683J
	R6125		RS2PMF1R5J
	R6148		RS2PMF220J
	R6131		RS2PMFR47J
	R6002 ,R6176		RS3LMF152J
	R6183		RS3LMF102J
	R6122		RS3PMF512J
	VR6002		VRTS6VS102
×	VR6006		VRTS6VS102
×	VR6004		VRTS6VS223
	VR6001,VR6003		VRTS6VS472
	Other Resistors		RD1/4PU□□□J

OTHERS

		SCREW	ABA-234
	CN6003	PLUG 3-P	AKM1055
	CN6004	PLUG 4-P	AKM1066
	H6001 -H6006	FUSE HOLDER	AKR-035
		SHIELD CASE	ANH1165
		SCREW	BBZ30P080FCU
	CN6001	PLUG 11-P	KM250MA11
	CN4801	PLUG 3-P	KM250MA3R
	CN6002	PLUG 5-P	KM250MA5
	CN6007	PLUG 6-P	KM250MA6
	CN4804	PLUG 6-P	KM250MA6B
	CN6008	PLUG 9-P	KM250MA9
		SCREW	PBZ30P080FMC
		SCREW	VPZ40P100FMC

B VIDEO ASSY

SEMICONDUCTORS

	IC2003	CXA1616S
	IC2503	HD14174BP
	IC2501	M51387P
	IC2203	PA0030
	IC2502	TA8751AN
	IC2202	TA8759BN
	IC2001,IC2002	TC4053BP
	IC2204	TC4538BP
	IC2201	TDA4565
	Q2003 ,Q2004 ,Q2009 ,Q2011	2SA1048
	Q2213 ,Q2214 ,Q2216 ,Q2217 ,Q2220	2SA1048
	Q2222 ,Q2223 ,Q2230 ,Q2237 ,Q2241	2SA1048
	Q2251 ,Q2513 -Q2516 ,Q2522	2SA1048
	Q2524 -Q2529 ,Q2533 ,Q2535	2SA1048
	Q2537 -Q2541 ,Q2544 -Q2546	2SA1048
	Q2548 -Q2552 ,Q2555 ,Q2556	2SA1048
	Q2558 -Q2562 ,Q2567 ,Q2573 -Q2576	2SA1048
	Q2579 ,Q2581 -Q2583 ,Q2587 ,Q2588	2SA1048
	Q2590 ,Q2592 ,Q2594	2SA1048
	Q2001 ,Q2002 ,Q2005 -Q2007 ,Q2010	2SC2458
	Q2012 ,Q2013 ,Q2015 -Q2022	2SC2458
	Q2202 -Q2212 ,Q2215 ,Q2218 ,Q2219	2SC2458
	Q2221 ,Q2224 -Q2229 ,Q2231 -Q2233	2SC2458
	Q2235 ,Q2236 ,Q2242 ,Q2243 ,Q2245	2SC2458
	Q2248 -Q2250 ,Q2501 -Q2512	2SC2458
	Q2517 -Q2519 ,Q2523 ,Q2530 -Q2532	2SC2458
	Q2534 ,Q2536 ,Q2542 ,Q2543 ,Q2547	2SC2458
	Q2553 ,Q2554 ,Q2557 ,Q2563 -Q2566	2SC2458
	Q2568 -Q2572 ,Q2577 ,Q2578 ,Q2580	2SC2458
	Q2584 -Q2586 ,Q2589 ,Q2591 ,Q2593	2SC2458
	Q2595	2SC2458
	D2001 -D2020 ,D2023 -D2026	HSS104-02
	D2202 -D2218 ,D2220 -D2227	HSS104-02
	D2229 -D2240 ,D2242 ,D2505 -D2518	HSS104-02
	D2522 -D2537 ,D2540 -D2543	HSS104-02
	D2548 -D2584 ,D2586 -D2590 ,D2592	HSS104-02
	D2595 -D2597 ,D2599	HSS104-02
	D2538	HZS15-1L
	D2504	HZS3BLL
	D2544 -D2546	HZS9B1L
	D2547 RD10ESB	
	D2246 -D2248 ,D2252	RD12ESB
	D2021 ,D2022 ,D2027 ,D2201 ,D2241	RD15ESB
	D2585 ,D2591 ,D2593 ,D2594	RD15ESB
	D2228	RD5.1ESB

Mark	No.	Description	Part No.
	D2243		RD6.2ESB
	D2244 ,D2245 ,D2249 -D2251 ,D2598		RD6.8ESB
	D2219		RD9.1ESB
COILS AND FILTERS			
	L2205		ATG1009
	DL2202		ATN1007
	DL2201		ATN1008
	DL2203		ATN1014
	DL2204		ATN1019
	L2201 ,L2202		LAU270K
	L2206 ,L2207		LAU330K
	L2204		LAU470K
	L2203		LAU680K
	L2501 -L2503		LAU6R8K
	L2208		LAU8R2K
	L2209		LTA562J
SWITCHES AND RELAYS			
	S2001		ASH1015
CAPACITORS			
	C2280		CCCCH120J50
	C2276		CCCCH181J50
	C2268		CCCCH220J50
	C2015		CCCCH221J50
	C2282		CCCCH330J50
	C2261		CCCCH390J50
	C2018 ,C2288 ,C2587		CCCCH470J50
	C2214 ,C2216 ,C2545 -C2547		CCCSL101J50
	C2221		CCCSL220J50
	C2206 ,C2542 -C2544		CCCSL221J50
	C2237 ,C2241		CCCSL270J50
	C2233		CCCSL271J50
	C2202		CCCSL330J50
	C2240		CCCSL470J50
	C2210 ,C2212 ,C2213		CCCSL680J50
	C2209 ,C2211 ,C2220		CCCSL820J50
	C2585 ,C2586		CCDCH470J50
	C2549		CEANP100M50
	C2016		CEANP1R0M50
	C2555 ,C2560 ,C2566		CEANP220M16
	C2274		CEANP2R2M50
	C2575		CEANP3R3M50
	C2041 ,C2201 ,C2548		CEANP470M25
	C2020 ,C2234 ,C2236 ,C2251 ,C2287		CEAS100M50
	C2503 ,C2505 ,C2507 ,C2523 ,C2536		CEAS100M50
	C2539 -C2541		CEAS100M50
	C2001 -C2008 ,C2245 ,C2502 ,C2504		CEAS101M10
	C2506		CEAS101M10
	C2225 ,C2259 ,C2302 ,C2521 ,C2537		CEAS101M25
	C2207 ,C2208 ,C2223 ,C2227 ,C2255		CEAS1R0M50
	C2262 ,C2279 ,C2508 ,C2512 ,C2515		CEAS1R0M50
	C2517 -C2519 ,C2522 ,C2524 ,C2525		CEAS1R0M50
	C2529 -C2531 ,C2570		CEAS1R0M50
	C2230 ,C2552 ,C2553 ,C2558 ,C2563		CEAS220M50
	C2048 ,C2271		CEAS221M16
	C2026		CEAS221M25
	C2244		CEAS222M16
	C2532 -C2534		CEAS2R2M50
	C2516 ,C2535		CEAS331M16
	C2033 ,C2035 ,C2215 ,C2231		CEAS470M25
	C2292 ,C2293 ,C2296 ,C2298 ,C2514		CEAS470M25
	C2520 ,C2526 ,C2550 ,C2557 ,C2562		CEAS470M25
	C2567 ,C2568 ,C2572 ,C2578 ,C2580		CEAS470M25
	C2582 -C2584		CEAS470M25
	C2217		CEAS470M50
	C2030 ,C2043 ,C2045 ,C2232 ,C2573		CEAS4R7M50
	C2226		CEAS6R8M50
	C2283		CEASR10M50
	C2022 ,C2222 ,C2289 ,C2290		CEASR47M50
	C2203		CEASR68M50
	C2242 ,C2243 ,C2247 ,C2248 ,C2250		CFTXA104J50
	C2253		CFTXA104J50
	C2024 ,C2025 ,C2029 ,C2265		CFTXA224J50
	C2219 ,C2235 ,C2273 ,C2277		CGCYX104M25
	C2509 -C2511		CGCYX104M25
	C2574		CGCYX473M25
	C2032 ,C2239 ,C2285 ,C2554 ,C2556		CKCYB102K50
	C2559 ,C2561 ,C2564 ,C2565		CKCYB102K50
	C2017 ,C2019 ,C2021 ,C2034 ,C2224		CKCYB103K50
	C2249 ,C2252 ,C2286 ,C2291		CKCYB103K50
	C2294 ,C2295 ,C2297 ,C2299 ,C2501		CKCYB103K50
	C2513 ,C2527 ,C2538 ,C2569 ,C2579		CKCYB103K50
	C2581		CKCYB103K50
	C2037		CKCYB332K50
	C2027		CKCYB392K2H
	C2023 ,C2038 ,C2049 ,C2204 ,C2205		CKCYB471K50
	C2010 -C2014 ,C2040 ,C2044 ,C2046		CKCYB472K50
	C2571		CKCYB472K50
	C2272		CKCYB561K50
	C2218 ,C2238 ,C2246 ,C2254		CKCYF103Z50
	C2256 ,C2257 ,C2267 ,C2269 ,C2270		CKCYF103Z50
	C2301		CKCYF103Z50
	C2284		CQMA102J50
	C2275		CQMA103J50
	C2028 ,C2039		CQMA104J50
	C2300		CQMA152J50
	C2281		CQMA223J50
	C2266		CQMA472J50
	C2263		CQMA473J50
	C2031		CQMA562J50
	C2258 ,C2264 ,C2278		CQMA563J50
	C2260		CQMA683J50
RESISTORS			
	R2270 (100kΩ/5Ω)		ACN1076
	R2244		RD1/2LMF4R7J
	R2650 -R2652		RD1/2PM101J
	R2382		RD1/2PM221J
	R2383 ,R2384		RN1/4PC2001F
	R2705		RN1/4PC3001F
	R2044		RN1/4PC3901F
	R2385		RN1/4PC6801F
	VR2201	(1kΩ)	ACP1040
	VR2203-VR2205	(4.7kΩ)	ACP1042

Mark	No.	Description	Part No.
	VR2202	(10kΩ)	ACP1043
	Other Resistors		RD1/4PU□□□J
OTHERS			
	2001-2005	BNC SOCKET	AKX1002
	X2203	(503kHz)	ASS1019
	X2201	(3.579545MHz)	ASS1091
	X2202	(4.433619MHz)	ASS1092
	CN2001	PLUG(9P D-SUB)	BKP1056
	CN2202,CN2203	PLUG 12-P	KM250MA12
	CN2201,CN2501	PLUG 4-P	KM250MA4
	CN2505	PLUG 4-P	KM250MA4R
	CN2204	PLUG 5-P	KM250MA5
	CN2506	PLUG 6-P	KM250MA6
	CN2503	PLUG 7-P	KM250MA7
	CN2502	PLUG 7-P	KM250MA7B
	CN2504	PLUG 7-P	KM250MA7R

F REAR LED ASSY

SEMICONDUCTORS			
	IC4902		M66311P
	IC4901		PD5136
	Q4901 ,Q4902		2SA1048
	D4908 -D4911		AEL1017
	D4912		AEL1058
	D4902 ,D4903		HSS104-02
	D4901		RD3.0ESB
	D4913 -D4915		RD5.6ESB
SWITCHES AND RELAYS			
	S4902 ,S4904 ,S4906		BSG1016
CAPACITORS			
	C4901 ,C4902		CCCCH221J50
	C4903		CEJA2R2M50
	C4907 ,C4909		CEJA470M16
	C4904		CFTXA104J50
	C4905 ,C4906 ,C4908		CKCYB472K50
RESISTORS			
	Other Resistors		RD1/4PU□□□J
OTHERS			
	X4901 (480kHz)		ASS1043

D CONV. AMP ASSY

SEMICONDUCTORS			
	IC4703,IC4704		M5223L
	IC4502		NJM7805FA
	IC4501		NJM7905FA
	IC4503,IC4504		STK392-110
	IC4701,IC4702		TC74HC4538AP
	IC4705		UPC78L05J
	Q4502 ,Q4515 -Q4517 ,Q4704 -Q4707		2SA1115
	Q4501 ,Q4503 ,Q4504 ,Q4509 ,Q4511		2SC2458
	Q4513 ,Q4514 ,Q4701 -Q4703		2SC2458
	D4501 -D4503 ,D4509 ,D4511 ,D4512		HSS104-02
	D4520 -D4523 ,D4701 ,D4702		HSS104-02
COILS AND FILTERS			
	L4503 -L4505		ATH-059
CAPACITORS			
	C4506 ,C4507 ,C4510 ,C4536 ,C4537		CCCCH151J50
	C4540		CCCCH151J50
	C4530		CEANP2R2M50
	C4704 ,C4708 ,C4714 ,C4719 ,C4722		CEAS101M10
	C4508 ,C4509 ,C4538 ,C4539		CEAS471M35
	C4529		CEASR10M50
	C4504 ,C4505 ,C4522 ,C4531 ,C4532		CEHAQ101M10
	C4511 -C4513 ,C4541 ,C4542 ,C4546		CEHAQ101M50
	C4535 ,C4545		CEHAQ2R2M50
	C4727		CEHAQ470M25
	C4502 ,C4503		CEHAQ471M16
	C4705 ,C4711		CFTXA824J50
	C4516		CKCYB102K50
	C4520		CKCYB331K50
	C4703 ,C4707 ,C4713 ,C4718 ,C4721		CKCYF103Z50
	C4723		CKCYF103Z50
	C4514 ,C4515 ,C4523 -C4528		CKCYF473Z50
	C4543 ,C4544		CKCYF473Z50
	C4521 ,C4550		CKDYF103Z50
	C4706 ,C4709 ,C4710 ,C4712		CQMA103J50
	C4715 ,C4716 ,C4720 ,C4725 ,C4726		CQMA103J50
	C4728		CQMA103J50
	C4701 ,C4702 ,C4717 ,C4724		CQPA561F2A
RESISTORS			
	R4535 ,R4536 ,R4573 ,R4574		RD1/2LMF101J
	R4508 ,R4509 ,R4724		RD1/2LMF471J
	R4518		RN1/4PC1000F
	R4516 ,R4707		RN1/4PC1002F
	R4708		RN1/4PC1202F
	R4519		RN1/4PC1301F
	R4717		RN1/4PC1302F
	R4718 ,R4720		RN1/4PC1502F
	R4702 ,R4703 ,R4712 ,R4713		RN1/4PC2200F
	R4714		RN1/4PC2201F
	R4721		RN1/4PC2202F
	R4556 -R4558 ,R4578 -R4580		RN1/4PC3300F
	R4510 -R4512 ,R4528 ,R4553 -R4555		RN1/4PC3301F
	R4567 -R4569 ,R4575 -R4577		RN1/4PC3301F
	R4730		RN1/4PC3901F
	R4722		RN1/4PC3902F
	R4515 ,R4517		RN1/4PC4700F
	R4705 ,R4706 ,R4715 ,R4716		RN1/4PC4702F
	R4514		RN1/4PC5100F
	R4701		RN1/4PC6202F
	R4524 ,R4525		RN1/4PC6800F
	R4704 ,R4710		RN1/4PC7501F
	R4709 ,R4719		RN1/4PC9101F
	R4549		RS1LMF1R0J
	R4561 -R4566		RS1LMF820J
	R4526 ,R4532 -R4534 ,R4570 -R4572		RS2LMF1R0J
	R4502 ,R4506		RS3LMFR22J
	R4585		RT10PD150K
	Other Resistors		RD1/4PU□□□J
OTHERS			
		SCREW	ABA1056
		SCREW	BBZ30P080FZK
	CN4508	PLUG 10-P	KM250MA10
	CN4505	PLUG 3-P	KM250MA3B
	CN4502	PLUG 4-P	KM250MA4

Mark	No.	Description	Part No.
	CN4501	PLUG 4-P	KM250MA4B
	CN4503	PLUG 4-P	KM250MA4R
	CN4506	PLUG 5-P	KM250MA5
	CN4511	PLUG 5-P	KM250MA5R
	CN4701	PLUG 6-P	KM250MA6
	CN4512	PLUG 6-P	KM250MA6B
	CN4507	PLUG 8-P	KM250MA8R
		SCREW	PBZ30P080FMC

I R CRT DRIVE ASSY

SEMICONDUCTORS

	Q4004 ,Q4005 ,Q4007	2SA1371
	Q4002	2SC2458
⚠	Q4003	2SC2611
	Q4006	2SC3468
	D4002 -D4004	1SS145
	D4005	HSS104-02

COILS AND FILTERS

	L4001	LAU101J
	L4003	LAU220J
	L4002	LAU470J

CAPACITORS

⚠	C4007 (1000pF/2kV)	ACG1001
⚠	C4002 (22µF/250V)	BCH1003
	C4005	CCCSL101J50
	C4001 ,C4003	CEAS101M25
	C4006	CKCYB102K50
	C4004	CKCYB681K50

RESISTORS

⚠	R4013 (1.8kΩ/0.5W)	ACN-221
	R4017 (47kΩ/0.5W)	ACN-225
	R4012	RD1/2PM103J
	R4015	RD1/2PM104J
	R4014	RD1/2PM224J
	R4016	RS2LMF473J
	R4002 ,R4006	RS3LMF332J
	Other Resistors	RD1/4PU□□□J

OTHERS

		CRT SOCKET	AKG1004
		HEAT SINK M3	ANH1409
		SCREW	BMZ30P080FMC
	CN4001	PLUG 7-P	KM250MA7R

H G CRT DRIVE ASSY

SEMICONDUCTORS

	Q4104 ,Q4105 ,Q4107	2SA1371
	Q4102	2SC2458
⚠	Q4103	2SC2611
	Q4106	2SC3468
⚠	Q4108	2SD1276A
	D4102 -D4104	1SS145
	D4105	HSS104-02
	D4107	RD12ESB

COILS AND FILTERS

	L4101	LAU101J
	L4103	LAU220J
	L4102	LAU470J

CAPACITORS

⚠	C4107 (1000pF/2kV)	ACG1001
	C4108 (4.7µF/250V)	ACH-378
	C4102 (22µF/250V)	BCH1003
	C4105	CCCSL101J50
	C4101 ,C4103	CEAS101M25
	C4106	CKCYB102K50
	C4104	CKCYB681K50

RESISTORS

⚠	R4113	ACN-221
⚠	R4117	ACN-225
	R4119	RD1/2LMF563J
	R4112	RD1/2PM103J
	R4115	RD1/2PM104J
	R4114	RD1/2PM224J
	R4116	RS2LMF473J
	R4102 ,R4106	RS3LMF332J
	Other Resistors	RD1/4PU□□□J

OTHERS

⚠		CRT SOCKET	AKG1004
		HEAT SINK M3	ANH1409
		SCREW	BMZ30P080FMC
	CN4101	PLUG 5-P	KM250MA5
	CN4102	PLUG 7-P	KM250MA7

G B CRT DRIVE ASSY

SEMICONDUCTORS

	Q4204 ,Q4205 ,Q4207	2SA1371
	Q4202	2SC2458
	Q4203	2SC2611
	Q4206	2SC3468
	D4202 -D4204	1SS145
	D4205	HSS104-02

COILS AND FILTERS

	L4201	LAU101J
	L4203	LAU220J
	L4202	LAU470J

CAPACITORS

⚠	C4207 (1000pF/2kV)	ACG1001
	C4202 (22µF/250V)	BCH1003
	C4205	CCCSL101J50
	C4201 ,C4203	CEAS101M25
	C4206	CKCYB102K50
	C4204	CKCYB681K50

RESISTORS

⚠	R4213 (1.8kΩ/0.5W)	ACN-221
⚠	R4217 (47kΩ/0.5W)	ACN-225
	R4212	RD1/2PM103J
	R4215	RD1/2PM104J
	R4214	RD1/2PM224J
	R4216	RS2LMF473J
	R4202 ,R4206	RS3LMF332J
	Other Resistors	RD1/4PUÅ†Å†Å†J

OTHERS

⚠		CRT SOCKET	AKG1004
		HEAT SINK M3	ANH1409
		SCREW	BMZ30P080FMC
	CN4201	PLUG 7-P	KM250MA7B

Mark	No.	Description	Part No.

N CONVERGENCE ASSY

SEMICONDUCTORS

	IC7015,IC7017,IC7326,IC7328	M5220L
	IC7003,IC7004	PA0053B
	IC7011	PM0011AS
	IC7021	TC74HC10AP
	Q7108 ,Q7109 ,Q7353	2SA1115
	Q7005 ,Q7011 ,Q7012 ,Q7101 -Q7105	2SC2458
	Q7201 ,Q7211 ,Q7221 ,Q7231 ,Q7241	2SC2458
	Q7251 ,Q7352 ,Q7354 -Q7358 ,Q7360	2SC2458
	D7038 ,D7039 ,D7438 ,D7440	HSS104-02
	D7121 ,D7439	HZS6C1L
	D7003 ,D7005 ,D7007 -D7019	RD12ESB
	D7054 ,D7055 ,D7399 -D7402	RD12ESB
	D7426 -D7429 ,D7434 -D7437	RD12ESB
	D7040	RD20ESB

CAPACITORS

	C7004 ,C7090 ,C7092 ,C7495	CCCCH150J50
	C7505 ,C7506	CCCCH150J50
	C7102	CCCCH151J50
	C7094	CCCCH330J50
	C7101	CCCCH560J50
	C7096 -C7099 ,C7121 ,C7459 ,C7460	CEAS101M10
	C7486 ,C7487 ,C7497 ,C7498 ,C7508	CEAS101M10
	C7510	CEAS101M10
	C7053	CEAS101M50
	C7054 ,C7055	CEAS102M6R3
	C7008 ,C7010 ,C7011	CEAS1R0M50
	C7020	CEAS1R5M50
	C7019	CEAS220M50
	C7018 ,C7021	CEAS330M50
	C7017	CEAS470M25
	C7009	CEASR47M50
	C7014 ,C7015	CFTYA224J50
	C7001 ,C7002 ,C7006 ,C7012 ,C7013	CKCYF103Z50
	C7052 ,C7056 ,C7057 ,C7091 ,C7093	CKCYF103Z50
	C7105 ,C7106 ,C7398 ,C7399 ,C7496	CKCYF103Z50
	C7499 ,C7507 ,C7509	CKCYF103Z50
	C7511	CKDYB681K50
	C7007	CQMA102J50
	C7016	CQMA154J50
	C7042	CQPA102F2A
	C7044	CQPA331F2A
	C7043	CQPA471F2A

RESISTORS

	R7117 ,R7118 ,R7386 ,R7387 ,R7512	RN1/4PC1002F
	R7516	RN1/4PC1002F
	R7500 ,R7504 ,R7539 ,R7540	RN1/4PC1003F
	R7384	RN1/4PC1004F
	R7379	RN1/4PC1202F
	R7293 ,R7307 ,R7316	RN1/4PC1502F
	R7302 ,R7315	RN1/4PC1503F
	R7123	RN1/4PC1802F
	R7115 ,R7116 ,R7514 ,R7515	RN1/4PC2002F
	R7503	RN1/4PC2003F
	R7502	RN1/4PC2200F
	R7501	RN1/4PC2203F
	R7120	RN1/4PC2402F
	R7536	RN1/4PC2403F
	R7291 ,R7305 ,R7312	RN1/4PC3002F
	R7205 ,R7215 ,R7225 ,R7235 ,R7245	RN1/4PC3300F
	R7255	RN1/4PC3300F
	R7282	RN1/4PC3302F
	R7171	RN1/4PC3303F
	R7303 ,R7314	RN1/4PC3602F
	R7537 ,R7538 ,R7541	RN1/4PC4303F
	R7378 ,R7513 ,R7517 -R7519	RN1/4PC4702F
	R7261 ,R7272 ,R7277 ,R7283	RN1/4PC5102F
	R7533	RN1/4PC5103F
	R7294 ,R7308 ,R7317 ,R7534	RN1/4PC8202F
	Other Resistors	RD1/4PU□□□J

OTHERS

	CN7207-CN7212 16P PLUG	KM200IA16
	CN7201-CN7206 20P PLUG	KM200IA20
	CN7002,CN7218 PLUG 3-P	KM250MA3
	CN7220 PLUG 3-P	KM250MA3B
	CN7028 PLUG 4-P	KM250MA4
	CN7022,CN7029,CN7213 PLUG 5-P	KM250MA5
	CN7214 PLUG 5-P	KM250MA5R
	CN7215 PLUG 6-P	KM250MA6
	CN7023 PLUG 8-P	KM250MA8
	CN7216 PLUG 8-P	KM250MA8R

O CONV. MODULE(RH) ASSY

SEMICONDUCTORS

	IC3001	PM0011AS
	D3001 ,D3002	HZS6C1L

CAPACITORS

	C3001 ,C3003	CEHAQ471M10
	C3002 ,C3004	CKCYF103Z50

RESISTORS

	R3016 ,R3017	RN1/4PC1002F
	R3010 -R3015	RN1/4PC3302F
	Other Resistors	RD1/4PU□□□J

OTHERS

	CN3002 16P SOCKET	KP200IA16L
	CN3001 20P SOCKET	KP200IA20L

P CONV. MODULE(RV) ASSY

SEMICONDUCTORS

	IC3051	PM0011AS
	D3051 ,D3052	HZS6C1L

CAPACITORS

	C3051 ,C3053	CEHAQ471M10
	C3052 ,C3054	CKCYF103Z50

RESISTORS

	R3066 ,R3067	RN1/4PC1002F
	R3060 -R3065	RN1/4PC3302F
	Other Resistors	RD1/4PU□□□J

OTHERS

	CN3052 16P SOCKET	KP200IA16L
	CN3051 20P SOCKET	KP200IA20L

Mark	No.	Description	Part No.

Q CONV. MODULE(GH) ASSY

SEMICONDUCTORS

	IC3101		PM0011AS
	D3101 ,D3102		HZS6C1L

CAPACITORS

	C3101 ,C3103		CEHAQ471M10
	C3102 ,C3104		CKCYF103Z50

RESISTORS

	R3116 ,R3117		RN1/4PC1002F
	R3110 -R3115		RN1/4PC3302F
	Other Resistors		RD1/4PU□□□J

OTHERS

	CN3102	16P SOCKET	KP200IA16L
	CN3101	20P SOCKET	KP200IA20L

R CONV. MODULE(GV) ASSY

SECONDUCTORS

	IC3151		PM0011AS
	D3151 ,D3152		HZS6C1L

CAPACITORS

	C3151 ,C3153		CEHAQ471M10
	C3152 ,C3154		CKCYF103Z50

RESISTORS

	R3166 ,R3167		RN1/4PC1002F
	R3160 -R3165		RN1/4PC3302F
	Other Resistors		RD1/4PU□□□J

OTHERS

	CN3152	16P SOCKET	KP200IA16L
	CN3151	20P SOCKET	KP200IA20L

S CONV. MODULE(BH) ASSY

SEMICONDUCTORS

	IC3201		PM0011AS
	D3201 ,D3202		HZS6C1L

CAPACITORS

	C3201 ,C3203		CEHAQ471M10
	C3202 ,C3204		CKCYF103Z50

RESISTORS

	R3216 ,R3217		RN1/4PC1002F
	R3210 -R3215		RN1/4PC3302F
	Other Resistors		RD1/4PU□□□J

OTHERS

	CN3202	16P SOCKET	KP200IA16L
	CN3201	20P SOCKET	KP200IA20L

T CONV. MODULE(BV) ASSY

SEMICONDUCTORS

	IC3251		PM0011AS
	D3251 ,D3252		HZS6C1L

CAPACITORS

	C3251 ,C3253		CEHAQ471M10
	C3252 ,C3254		CKCYF103Z50

RESSISTORS

	R3266 ,R3267		RN1/4PC1002F
	R3260 -R3265		RN1/4PC3302F
	Other Resistors		RD1/4PU□□□J

OTHERS

	CN3252	16P SOCKET	KP200IA16L
	CN3251	20P SOCKET	KP200IA20L

Mark	No.	Description	Part No.

E POWER SUPPLY ASSY

SEMICONDUCTORS

	IC5001		M5233P
⚠	IC5002		ON3171-Q
	IC5004		PQ30RV11(A)
⚠	IC5003		TA76431S
	Q5003 ,Q5007 ,Q5009 ,Q5020		2SA933S
	Q5018 ,Q5021		2SB1566
	Q5002 ,Q5006 ,Q5008 ,Q5010 -Q5012		2SC1740S
	Q5014 ,Q5019		2SC1740S
⚠	Q5005		2SC2705
	Q5001 ,Q5004 ,Q5013 ,Q5015 -Q5017		2SD1835
⚠	Q5000		2SK1342-06
	D5038		1SS145
	D5019		AEL1075
	D5053		AEL1128
	D5001 ,D5003 -D5005 ,D5007 -D5011		HSS104-02
	D5014 -D5018 ,D5021 ,D5024		HSS104-02
	D5026 -D5029 ,D5035 ,D5041 ,D5042		HSS104-02
	D5045 ,D5048 -D5050 ,D5052		HSS104-02
	D5054 ,D5055 ,D5063 ,D5065 -D5067		HSS104-02
	D5070 ,D5071		HSS104-02
	D5000		HZS24-3L
	D5006		HZS5BLL
	D5039		HZS6A2L
	D5025 ,D5051		HZS6C2L
	D5043		RBV-604(A)
	D5012 ,D5023 ,D5036 ,D5056		RD12ESB1
	D5064		RD2.0ESB1
	D5046 ,D5072		RD3.3ESB1
	D5022		RD4.7ESB
⚠	D5013		RG4C(A)
	D5020 ,D5044 ,D5057 -D5062		RL4Z(A)
	D5037		RU4A(A)
	D5030 -D5033		S5688G

COILS AND FILTERS

⚠	L5021		ATF1118
⚠	L5022		ATF1154
⚠	L5023		ATF1158
	L5000 -L5005 ,L5007 -L5020		ATX1023

TRANSFORMER

⚠	T5000		ATT1145
⚠	T5001		BTK1002

SEITCHES AND RELAYS

⚠	RY5000-RY5002		ASR1036

CAPACITORS

⚠	C5008	(0.047μF/400V)	ACE1047
⚠	C5032 -C5035	(1.0μF/AC250V)	ACE1050
	C5040 -C5043	(0.01μF/AC250V)	ACG-001
	C5062	(1000pF/2kV)	ACG-040
	C5061	(220pF/2kV)	ACG-050
⚠	C5000 ,C5001 ,C5010 ,C5011	(4700pF/250V)	ACG7019
	C5017	(560μF/160V)	ACH1146
⚠	C5047 ,C5048	(1000μF/200V)	ACH1164
⚠	C5009	(2.2μF/25V)	ACH1278
	C5021 ,C5022 ,C5026 ,C5039 ,C5050	(3300μF/50V)	ACH1280

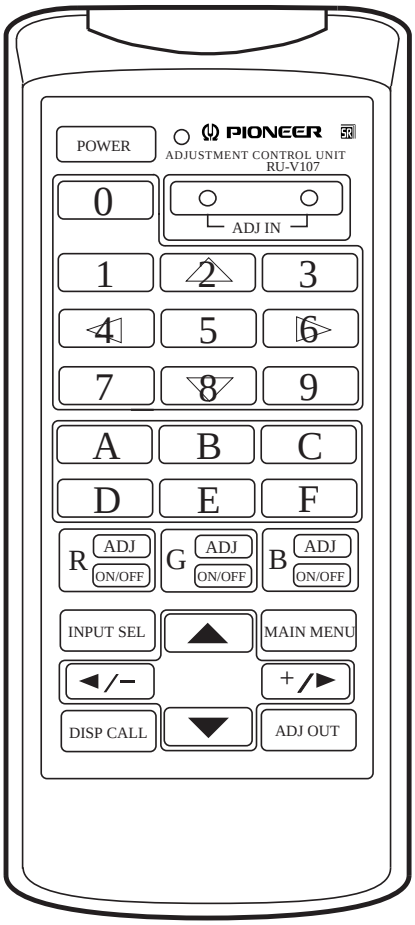
Mark	No.	Description	Part No.
	C5070		CCCSL121J50
	C5014 -C5016 ,C5018 ,C5019 ,C5049		CCCSL221K2H
	C5045		CCCSL470J50
	C5020		CEAS101M10
	C5054		CEAS102M25
	C5005		CEAS220M50
	C5059		CEAS222M16
	C5025		CEAS330M25
	C5036		CEAS332M25
	C5075		CEAS470M25
	C5046		CEAS470M50
	C5051		CEAS471M16
	C5013		CEHAQ1R0M50
	C5023 ,C5024 ,C5071 -C5073		CKCYB102K50
	C5012 ,C5028 -C5030 ,C5037 ,C5038		CKCYB103K50
	C5044 ,C5053 ,C5055 -C5057 ,C5060		CKCYB103K50
	C5058		CKCYB331K50
	C5031		CKCYE472P2H
	C5027		CKCYF102Z50
	C5052 ,C5076		CKCYF103Z50
	C5007 ,C5080		CKDYF103Z50
	C5002 -C5004		CQMA103J50
	C5006		CQMA472J50
RESISTORS			
	R5117 (5.6Ω/5W)		ACN1033
	R5000 (0.1Ω/5W)		ACN1098
⚠	R5100		RD1/2LMF101J
⚠	R5001		RD1/2LMF1R0J
⚠	R5002		RD1/2LMF470J
	R5084		RD1/2LMF470J
	R5050		RD1/2PM153J
	R5032		RD1/2PM154J
	R5007		RD1/2PM161J
	R5071		RD1/2PM201J
	R5058 ,R5068		RD1/2PM394J
	R5009		RD1/2PM471J
	R5012		RD1/2PM472J
	R5003 ,R5005		RD1/2PM474J
	R5114		RD1/2PM4R7J
	R5004		RD1/2PM682J
	R5115		RD1/2PM820J
	R5070		RN1/4PC1502F
	R5057 ,R5110		RN1/4PC1603F
	R5015		RN1/4PC2202F
	R5018		RN1/4PC2702F
	R5104		RN1/4PC3001F
	R5056 ,R5069		RN1/4PC3601F
	R5014		RN1/4PC4700F
	R5020		RN1/4PC5102F
	R5105		RN1/4PC6800F
	R5017		RN1/4PC8201F
	R5033		RS1LMF223J
	R5072		RS1LMF331J
	R5085		RS2LMF3R3J
	R5022 ,R5023 ,R5101 ,R5102		RT10PZ222K
	R5060 ,R5066		RT5PZ2R7K
	VR5000		VRTS6VS102
	Other Resistors		RD1/4PU□□□J
OTHERS			
		SCREW	ABZ30P080FZK
		MICA SHEET	AEP-056
	H5000 -H5003		AKR1003
		HEAT SINK M	ANH-697
		HEAT SINK B	ANH1021
	KN5006	GROUND PLATE	ANK-142
		SCREW	BBZ30P080FCU
		SCREW	BBZ30P080FZK
⚠	CN5000	PLUG 2-P	BKM1027
		SCREW	BMZ30P080FMC
	CN5003	PLUG 10-P	KM250MA10
	CN5005	PLUG 11-P	KM250MA11
	CN5001	PLUG 3-P	KM250MA3
	CN5002	PLUG 4-P	KM250MA4
	CN5004	PLUG 5-P	KM250MA5
		SCREW	PBZ30P080FMC
		SCREW	VBB30P120FZB

6. ADJUSTMENT

6.1 Adjustments by Remote Control

Multi projection unit adjustments can be performed using the remote control (RU-V107) besides the computerand software.
All adjustments are performed only using the remote control.
Up to 16 units can be operated using the remote control unit at one time using the link cable.

① Remote control functions.



1) POWER
- Turns on/off the power of the unit.

2) 0

<Adjustment Mode>
- Selects ID CLEAR in the ID SET/CLEAR/SELECT MODE. Also selects “0” for ID SET and ID SELECT.
- Selects V STATIC in the DEFLECTION ADJUST MODE.
- Selects ABL GAIN in the WHITE BALANCE ADJUST MODE.
- Ciclically selects the adjustment items in the POINT CONVER ADJUST MODE in the following order.

POINT adjustment → File area → Line area

3, 4) ADJ IN
- Starts up the adjustment mode when the two buttons are pressed simultaneously.

5) 1

<Adjustment Mode>
- Selects 1 (ID SET/SELECT/CLEAR MODE) of the main menu of the adjustment mode.
- Sets ID SET in the ID SET/CLEAR/SELECT MODE. Also selects “1” for ID SET and ID SELECT.
- Selects STATIC in the CONVERGENCE ADJUST MODE.
- Selects CONTRAST in the WHITE BALANCE ADJUST MODE.
- Returns the CONVERGENCE ADJUST DATA to the factory set data in the MEMORY READ/COPY MODE.
- Select the pattern (1→2) for copying the convergence data between memories in the MEMORY READ/COPY MODE.

6) 2

<Adjustment Mode>
- Selects 2 (OPERATION MODE) of the main menu of the adjustment mode.
- Sets ID SELECT in the ID SET/CLEAR/SELECT MODE. Also selects “2” for ID SET and ID SELECT.
- Cyclically selects the input function in the OPERATION MODE in the following order.

VIDEO → Y/C → RGB

- Selects the V SIZE in the DEFLECTION ADJUST MODE.

- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

SIZE → MID SIDE → 5D SIZE

- Moves the point to be adjusted up in the POINT CONVER ADJUST MODE.
- Selects BRIGHTNESS in the WHITE BALANCE ADJUST MODE.
- Returns the WHITE BALANCE ADJUST DATA to the factory set data in the MEMORY READ/COPY MODE.
- Select the pattern (1→3) for copying the convergence data between memories in the MEMORY READ/COPY MODE.

7) 3

<Adjustment Mode>

- Selects 3 (DEFLECTION ADJUST MODE) of the main menu of the adjustment mode.
- Selects "3" for ID SET and ID SELECT in the ID SET/ CLEAR/SELECT MODE.
- Cyclically switches MULTI ON/OFF in the OPERATION MODE.
- Selects V MID SIZE in the DEFLECTION ADJUST MODE.
- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

LINEARITY → MID LINEARITY → 6D LINEARITY

- Selects COLOR in the WHITE BALANCE ADJUST MODE(,only invalid for RGB input).
- Reset the various setting value in the MEMORY READ/COPY MODE.
- Select the pattern (2→1) for copying the convergence data between memories in the MEMORY READ/COPY MODE.

8) 4

<Adjustment Mode>

- Selects 4 (CONVERGENCE ADJUST MODE) of the main menu of the adjustment mode.
- Selects "4" for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE.
- Cyclically switches COLOR MODE 1/2 in the OPERATION MODE.
- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

SKEW → 3D SKEW → 5D SKEW

- Moves the point to be adjusted to the left in the POINT CONVER ADJUST MODE.
- Selects TINT in the WHITE BALANCE ADJUST MODE(,only invalid for RGB and PAL signal input).
- Select the pattern (2→3) for copying the convergence data between memories in the MEMORY READ/COPY MODE.

9) 5

<Adjustment Mode>

- Selects 5 (POINT CONVERGENCE ADJUST MODE) of the main menu of the adjustment mode.
- Selects "5" for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE. Also, clear the ID in the ID CLEAR MODE.
- Cyclically switches COMBINATION ON/OFF in the OPERATION MODE.
- Selects H SIZE in the DEFLECTION ADJUST MODE.
- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

KEY → MID KEY → 3D KEY → MID 3D KEY

- Selects SHARPNESS in the WHITE BALANCE ADJUST MODE(,only invalid for RGB input).
- Select the pattern (3→1) for copying the convergence data between memories in the MEMORY READ/COPY MODE.

10) 6

<Adjustment Mode>

- Selects 6 (WHITE BALANCE ADJUST MODE) of the main menu of the adjustment mode.
- Selects "6" for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE.
- Cyclically switches VIDEO MUTE ON/OFF in the OPERATION MODE.
- Selects V LINEARITY in the DEFLECTION ADJUST MODE.
- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

SUB KEY → MID SUB KEY
MID 3D SUB KEY ← 3D SUB KEY

- Moves the point to be adjusted to the right in the POINT CONVER ADJUST MODE.
- Selects LINEAR WHITE in the WHITE BALANCE ADJUST MODE.
- Select the pattern (3→2) for copying the convergence data between memories in the MEMORY READ/COPY MODE.

11) 7

<Adjustment Mode>

- Selects 7 (MEMORY READ MODE) of the main menu of the adjustment mode.
- Selects “7” for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE.
- Cyclically selects the RS-232C baud rate in the OPERATION MODE in the following order.

  1200 → 2400 → 4800 → 9600 → 19200 →

- Selects H BLK-L in the DEFLECTION ADJUST MODE.
- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

  BOW → 4D → 6D BOW →

- Selects RED HIGHLIGHT in the WHITE BALANCE ADJUST MODE.

12) 8

<Adjustment Mode>

- Selects “8” for ID SET and ID SELECT in the ID SET/ CLEAR/SELECT MODE.
- Cyclically selects TV SYSTEM in the OPERATION MODE in the following order.

  AUTO → NTSC → PAL →

- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

  PIN → MID PIN → 4D PIN → MID 4D PIN →

- Moves the point to be adjusted down in the POINT CONVER ADJUST MODE.
- Selects GREEN HIGH-LIGHT in the WHITE BALANCE ADJUST MODE.
- Selects H BLK-R in the DEFLECTION ADJUST MODE.

13) 9

<Adjustment Mode>

- Selects “9” for ID SET and ID SELECT in the ID SET/ CLEAR/SELECT MODE.
- Cyclically selects TV SYSTEM in the OPERATION MODE in the following order.

  1 → 2 → 3 →

- Selects V MID LINEARITY in the DEFLECTION ADJUST MODE.
- Cyclically selects the item to be adjusted in the CONVERGENCE ADJUST MODE in the following order.

  SUB PIN → MID SUB PIN → MID 4D SUB PIN ← 4D SUB PIN ←

- Selects BLUE HIGH-LIGHT in the WHITE BALANCE ADJUST MODE.

14) A

<Adjustment Mode>

- Selects “A” for ID SET and ID SELECT in the ID SET/ CLEAR/SELECT MODE.
- Subtracts 10 from the current CONTRAST adjusting value in the DEFLECTION ADJUST MODE, CONVERGENCE ADJUST MODE, and POINT CONVER ADJUST MODE.(Returns to the original adjusting value when the adjustment mode is exited.)
- Selects RED LOW-LIGHT in the WHITE BALANCE ADJUST MODE.

15) B

<Adjustment Mode>

- Selects “B” for ID SET and ID SELECT in the ID SET/ CLEAR/SELECT MODE.
- Selects H PIN in the DEFLECTION ADJUST MODE.
- Selects GREEN LOW-LIGHT in the WHITE BALANCE ADJUST MODE.

16) C

<Adjustment Mode>

- Selects “C” for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE.
- Adds 10 to the current CONTRAST adjusting value in the DEFLECTION ADJUST MODE, CONVERGENCE ADJUST MODE, and POINT CONVER ADJUST MODE.(Returns to the original adjusting value when the adjustment mode is exited.)
- Selects BLUE LOW-LIGHT in the WHITE BALANCE ADJUST MODE.

17) D

<Adjustment Mode>

- Selects “D” for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE.
- Selects GH LINEARITY in the DEFLECTION ADJUST MODE.

  (Note: This adjustment item is the same as GH LINEARITY in the convergence ADJUST MODE.)
- Selects ABL LEVEL in the WHITE BALANCE ADJUST MODE. (It is valid at COMBINATION=ON.)

18) E

<Adjustment Mode>

- Selects “E” for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE.

19) F

<Adjustment Mode>

- Selects “F” for ID SET and ID SELECT in the ID SET/ CLEAR/ SELECT MODE.

20) R ADJ ON/OFF

<Adjustment Mode>

- Cyclically switches the adjusting color and direction between RH and RV in the CONVERGENCE ADJUST MODE.
- Selects the adjusting color RED in the POINT CONVER ADJUST MODE.

21) G ADJ ON/OFF

<Adjustment Mode>

- Cyclically switches the adjusting color and direction between BH and BV in the CONVERGENCE ADJUST MODE.
- Selects the adjusting color BLUE in the POINT CONVER ADJUST MODE.

22) B ADJ ON/OFF

<Adjustment Mode>

- Cyclically switches the adjusting color and direction between BH and BV in the CONVERGENCE ADJUST MODE.
- Selects the adjusting color BLUE in the POINT CONVER ADJUST MODE.

23) R ADJ ON/OFF

<Adjustment Mode>

- Cyclically switches RED ON/OFF in the DEFLECTION ADJUST MODE, CONVERGENCE ADJUST MODE, POINT CONVER ADJUST MODE , and WHITE BALANCE ADJUST MODE.

<Normal Mode>

- Sets the input function to VIDEO.

24) G ADJ ON/OFF

<Adjustment Mode>

- Cyclically switches GREEN ON/OFF in the DEFLECTION ADJUST MODE, CONVERGENCE ADJUST MODE, POINT CONVER ADJUST MODE , and WHITE BALANCE ADJUST MODE.

<Normal Mode>

- Sets the input function to Y/C.

25) B ADJ ON/OFF

<Adjustment Mode>

- Cyclically switches BLUE ON/OFF in the DEFLECTION ADJUST MODE, CONVERGENCE ADJUST MODE, POINT CONVER ADJUST MODE , and WHITE BALANCE ADJUST MODE.

<Normal Mode>

- Sets the input function to RGB.

26) INPUT SEL

<Normal Mode>

- Cyclically switches the input function in the following order.

→ VIDEO → Y/C → RGB →

27) ▲

<Adjustment Mode>

- Moves the convergence up in the POINT CONVER ADJUST MODE.

28) MAIN MENU

<Adjustment Mode>

- Returns the main menu of the adjustment mode.

29) ◄/–

<Adjustment Mode>

- Decreases the adjusting value.
- Moves the convergence to the left in the POINT CONVER ADJUST MODE.

30) +/►

<Adjustment Mode>

- Increases the adjusting value.
- Moves the convergence to the right in the POINT CONVER ADJUST MODE.

31) DISP CALL

<Adjustment Mode>

• In the deflection adjust mode, switches cyclically, as follows:

Normal adjustment items → Main deflection adjustment setting table (see below) → Test cross

Main deflection adjustment setting table

0. V STATIC	128	(G128)
2. V SIZE	128	(G128)
3. V M SIZE	128	(G128)
5. H SIZE	128	(G128)
6. V LI	128	(G128)
7. H BLK-L	128	- - -
8. H BLK-R	128	- - -
9. V M LIN	128	(G128)
B. H PIN	128	(G128)
D. GH LIN	→	G128

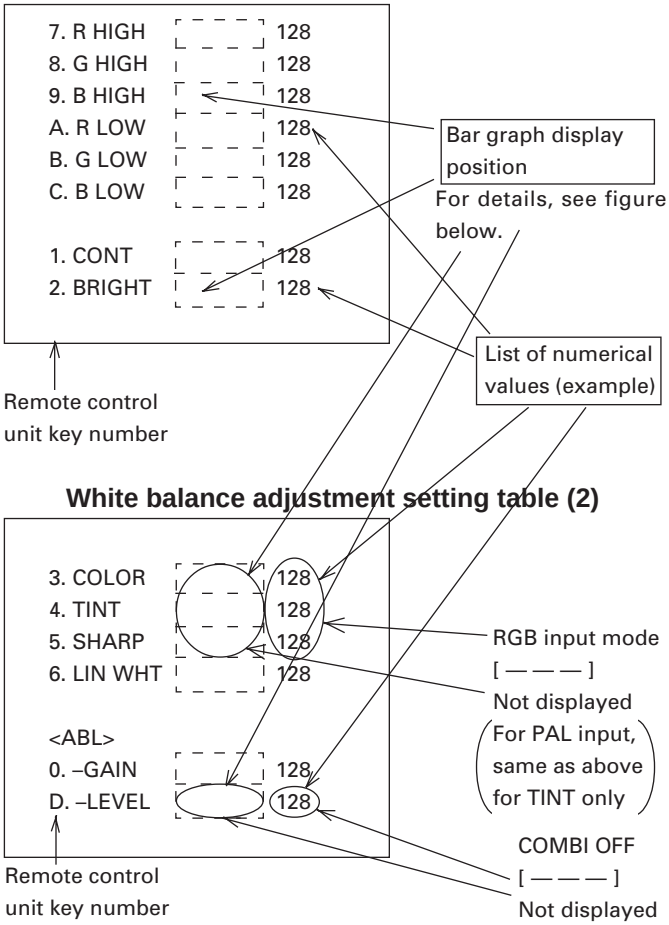
Convergence green adjustment settings corresponding to the various main deflection adjustments

Remote control unit key number

Main deflection adjustment setting

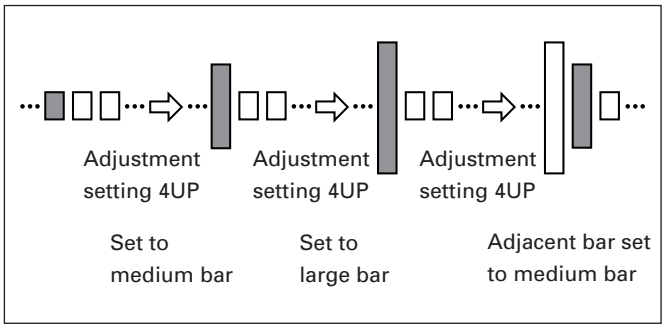
This item (convergence GH LINEARITY) alone can be selected and adjusted directly from this menu. Other convergence data (adjustment items within (G***)) cannot be selected directly from this menu.

White balance adjustment setting table (1)


7. R HIGH 128
8. G HIGH 128
9. B HIGH 128
A. R LOW 128
B. G LOW 128
C. B LOW 128
1. CONT 128
2. BRIGHT 128
Bar graph display position
For details, see figure below.
List of numerical values (example)
Remote control unit key number

White balance adjustment setting table (2)

3. COLOR 128
4. TINT 128
5. SHARP 128
6. LIN WHT 128
<ABL>
0. –GAIN 128
D. –LEVEL 128
RGB input mode [— — —]
Not displayed
For PAL input, same as above for TINT only
COMBI OFF [— — —]
Not displayed
Remote control unit key number



NOTES)

The set operates as follows when the above is displayed:

- No key is pressed = Adjustment mode is canceled after about 180 seconds.
- "MAIN MENU" or "ADJ IN" pressed = Main menu reappears.
- "ADJ OUT" pressed = Adjustment mode is canceled.
- Any key from "0" to "D" pressed = Main deflection adjustment mode corresponding to that key is set.
  The adjustment settings cannot be changed when the above adjustment settings are displayed.

• In the convergence adjust mode, the test cross is turned on.

Adjustment item → Test cross

• In the white balance adjust mode, switches in the following cycle:

Normal adjustment item → White balance adjustment setting table (1) (see Right) → White balance adjustment setting table (2) (see Right) → Normal adjustment item

NOTES)

The set operates as follows when the above is displayed:

- No key is pressed = Adjustment mode is canceled after about 180 seconds.
- "MAIN MENU" or "ADJ IN" pressed = Main menu reappears.
- "ADJ OUT" pressed = Adjustment mode is canceled.
- Any key from "0" to "D" pressed = W/B adjustment mode corresponding to that key is set.
  The adjustment settings cannot be changed when the above adjustment settings are displayed.

<Normal Mode>

• Cyclically switches the Status display in the ON/OFF.

32) [▼]

<Adjustment Mode>

- Moves the convergence down in the POINT CONVER ADJUST MODE.

33) [ADJ OUT]

<Adjustment Mode>

- Exits the adjustment mode.

34) LED for Confirming Transmission

② Performing Adjustments

1) Entering and exiting the adjustment mode

Turn on the power switch and press the two [ADJ IN] keys of the remote control together. The adjustment mode will be set. To exit this mode, press the [ADJ OUT] key of the remote control. The normal screen will return.

2) Using the adjustment mode

The following main menu will be displayed when the adjustment mode is entered.

```
——                    ADJUST
1.ID SET/CLEAR/SELECT
2.OPERATION MODE
3.DEFLECTION ADJ
4.CONVERGENCE ADJ
5.POIT CONVER ADJ
6.WHITE BALANCE ADJ
7.MEMORY READ/COPY
```

- Main Menu

1) ID SET/CLEAR/SELECT mode
   Used for selecting, setting and clearing the ID.
2) OPERATION mode
   Switches the setting such as input selection, ABL linkage ON/OFF, etc.
3) DEFLECTION ADJ mode
   Adjusts the main deflection size, etc. (But all three colors RGB at once except GH LINEARITY.)
4) CONVERGENCE ADJ mode
   Adjusts the convergence. (R, G, and B can be adjusted individually.)
5) POINT CONVER ADJ mode
   Adjusts the convergence by point and zone convergence. (R,G,and B can be adjusted individually.)
6) WHITE BALANCE ADJ mode
   Adjusts the white balance, color.
7) MEMORY READ/COPY mode
   Adjusts the current value (both convergence and white balance) to the value set at shipment, and copy the convergence data between the memories.

③ Adjustment Examples

[1] Setting the ID

1) Enter the adjustment mode by [ADJ IN] key.
2) The main menu will be displayed. Press the [1] key to select [1. ID SET/CLEAR/SELECT].
3) Check that the ID display at the top left of the screen is [– –].

   Press the [1] key to select [1. ID SET].

   When an ID has already been provided, delete the ID as follows and perform from step 1).

   a) Press the [ADJ IN] key to set the adjustment mode. The main menu will be displayd.
   b) Press the [1] key and select [1. ID SET/CLEAR/SELECT].
   c) Press the [0] key, press the [5] key, and then erase the ID.

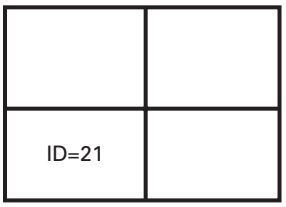
4) The ID input standby state will be set. Use the [0] to [9] and [A] to [F] keys to input the ID.
5) If several units are used, return to step 1) and set the ID of the next unit.

[2] Entering the adjustment mode of certain units only.

1) Enter the adjustment mode.
2) Check that all the screens display the adjustment mode. Press the [1] key to select [1. ID SET/CLEAR/SELECT] of the main menu.
3) Another menu will be displayed. Press the [2△] key to select [2. ID SELECT].
4) Input the ID of the unit to be adjusted.
5) Only the unit corresponding to the ID input will display the main menu. All other units will be in the standby state.
6) Perform the usual adjustments.
7) a) To continue adjusting the screen for which ID has been selected Press the [MAIN MENU] key to return to the main menu.
   b) Ending the adjustment mode
   Press the [ADJ OUT] key and return to the NORMAL OPERATION MODE. Note)
   c) Adjusting another unit
   Repeat the mentioned operation 1) to 7).

Note) Even if a certain unit has timed-out and is shifting to the normal mode, be sure to perform one of the following steps a) or b) or c). If not, the unit for which ID SELECT has not been performed will remain in the standby state.

Example) When the ID=21 screen in the figure below is selected and left for more than 180 seconds without performing any operation:
Bottom left screen : Normal mode
Other screens : Standby state of the remote control adjustment mode.
To exit from these states, perform the following.



   a) To continue adjustment
   Press the [ADJ IN] key to set all screens into the remote control adjustment mode, and perform adjustments.
   b) To end adjustments
   Press the [ADJ OUT] key and exit from the remote control adjustment mode of screens in the standby state.
   c) To turn OFF the power
   Press the [POWER] key to turn OFF the power of all screens (STANDBY state).

[3] Adjusting the H SIZE

1) Enter the adjustment mode.
2) Press the [3] key to select [3. DEFLECTION ADJ] .
3) Press the [5] key to select [H SIZE] . Then use the and keys to adjust the H PHASE.
   The following can be adjusted using similar methods.

[0] key : V STATIC
[2△] key : V SIZE
[3] key : V MID SIZE
[5] key : H SIZE
[6▷] key : V LINEARITY
[D] key : GH LINEARITY (is the same as GH LINEARITY in "4. CONVERGENCE ADJ".)
[7] key : H BLK-L
[8▽] key : H BLK-R
[9] key : V MID LINEARITY
[B] key : H PIN

[4] Adjusting the green horizontal size (GH SIZE)

1) Enter the adjustment mode.
2) Press the [4◁] key to select [4. CONVERGENCE ADJ] .
3) Press the [G ADJ ON/OFF] key until the OSD display becomes [GH].
   The following can be adjusted in the same way.

[R ADJ ON/OFF] key : RH ⟷ RV
[B ADJ ON/OFF] key : BH ⟷ BV

4) Press the [2△] key until the OSD display becomes [SIZE].
   Then use the [◄/–] and [+/►] keys to adjust the GH SIZE.
   The following can be adjusted in the same way.

[1] key : STATIC
[2△] key : → SIZE → MID SIZE → 5D SIZE →
[3] key : → LINEARITY → MID LINEARITY → 6D LINEARITY →
[4◁] key : → SKEW → 3D SKEW → 5D SKEW →
[5] key : → KEY → MID KEY → 3D KEY → MID 3D KEY →
[6▷] key : → SUB KEY → MID SUB KEY → 3D SUB KEY → MID 3D SUB KEY →
[7] key : → BOW → 4D BOW → 6D BOW →
[8▽] key : → PIN → MID PIN → 4D PIN → MID 4D PIN →
[9] key : → SUB PIN → MID SUB PIN → 4D SUB PIN → MID 4D SUB PIN →

[5] Adjusting the red point convergence

1) Enter the adjustment mode.
2) Press the [5] key to select [5. POINT CONVER ADJ] .
3) Press the [R ADJ ON/OFF] key so that only the blue of the screen is erased.
   The following can be selected in the same way.

   ([G ADJ ON/OFF] : Green adjustment
   [G ADJ ON/OFF] : Blue adjustment.)

4) Use the [2△], [4◁], [6▷] and [8▽] keys to move the OSD display to the point to be adjusted on the screen, and use the [▲], [▼], [◄/–] and [+/►] keys to adjust the convergence of that point.
5) Pressing the [0] key will select the area adjustment and point adjustment cyclically.

[6] Adjusting the red high light

1) Set the adjustment mode.
2) Press the [6▷] key to select [6. WHITE BALANCE ADJ].
3) Press the [7] key to select [R HIGH]. And use the [◄/–] and [+/►] keys to adjust the red high light.
   The following can be adjusted in the same way.

[0] key	: ABL GAIN	[7] key	: R HIGH
[1] key	: CONTRAST	[8▽] key	: G HIGH
[2△] key	: BRIGHT	[9] key	: B HIGH
[3] key	: COLOR (Note 1)	[A] key	: R LOW
[4◁] key	: TINT (Note 2)	[B] key	: G LOW
[5] key	: SHARPNESS (Note 1)	[C] key	: B LOW
[6▷] key	: LINEAR WHITE	[D] key	: ABL LEVEL (Note 3)

(Note 1) It is invalid for RGB input.
(Note 2) It is invalid for RGB and PAL input.
(Note 3) It is valid only at COMBINATION =ON.

[7] Turning on the peripheral light amount correction (MULTI)

1) Enter the adjustment mode.
2) Press the [2△] key to select [2. OPERATION MODE] .
3) Press the [3] key to turn on/off the peripheral light amount correction (MULTI).
   The following can be performed in the same way.

   [2△] key : Input selection (→ VIDEO → Y/C → RGB →)

   [3] key : Peripheral light amount correction (ON ⟷ OFF)

   [4◁] key : Color mode (1 ⟷ 2)

   [5] key : COMBINATION (ON ⟷ OFF)

   [6▷] key : VIDEO MUTE (ON ⟷ OFF)

   [7] key : Baud rate selection

   (→ 1200BPS → 2400BPS → 4800BPS → 9600BPS → 19200BPS →)

   [8▽] key : TV system selection

   (→ AUTO → NTSC → PAL →)

   [9] key : Convergence memory selection area switching

[8] To return the convergence and white balance adjustment data to that at shipment:

1) Set the adjustment mode.
2) Press the [7] key.
   Select [7. MEMORY READ/COPY].
3) Select the number from the SUB MENU.
   [1] key : The convergence and deflection adjustment data will return to that at shipment.
   [2△] key : The white balance adjustment data will return to that at shipment.

[9] To copy the convergence adjustment data between memories:

1) Set the adjustment mode.
2) Press the [7] key.
   Select [7. MEMORY READ/COPY].
3) Press the [4◁] key of the SUB MENU.
   Select [4. CONV. MEMORY COPY].
4) Select the copy pattern (keys [1] to [6]).
5) If the copy pattern number is correct, press the [0] key within 5 seconds. (If not, the copy pattern will be displayed again.)
   If the copy pattern number is wrong, press the [MAIN MENU] key and repeat from step 2 again.

[10] Resetting the setting

1) Set the adjustment mode.
2) Press the [7] key.
   Select [7. MEMORY READ/COPY].

3) Press the [3] key of the SUB MENU.

As a result, the following settings will be set.

- MULTI (Peripheral light amount correction)=ON
- Baud rate=4800 bps
- COLOR MODE=1
- TV SYSTEM=AUTO
- VIDEO MUTE=OFF
- COMBINATION=OFF
- Convergence memory

NTSC input (VIDEO, Y/C, RGB)=MEMO-1
PAL input (VIDEO, Y/C, RGB)=MEMO-2
Baud rate=4800 bps

The adjustments using the above settings can be performed very easily.

Example : When the baud rate of each projection unit is set to 2400 bps as they are not same.

① Press the [ADJ IN] key. (To set the adjustment mode).

② Press the [7] key (To select [7. MEMORY READ/COPY].)

③ Press the [3] key (As the SUB MENU is selected, 4800 bps will be selected automatically.)

- To set the baud rate to 4800 bps, proceed onto step 7.

④ Press the [6] key. (Returns to the main menu).

⑤ Press the [2] key (Select [2. OPERATION MODE]).

⑥ Press the [7] key (As the baud rate changes cyclically, 2400 bps is selected.)

⑦ Press the [ADJ OUT] key to select a baud rate.

The adjustment is completed.

④ Precautions Upon Use (Adjustment Control Unit)

- Always release the adjustment mode with [ADJ OUT] button and turn off the power with the [POWER] button after adjustments and settings. All adjusted values and settings will be memorized.

- The remote control adjustment mode will automatically be exited in the following.
  1. When no operations are performed for about 180 seconds.
  2. When the rear panel switch is pressed
  3. When the power is turned off
  4. When the input signal is switched, the cable is disconnected, or the mode is switched : NTSC ⟷ PAL.
     (However, in some cases, switching between PAL and no-signal may not exit the mode.)

- One multi-projection unit cannot be adjusted using the remote control unit and personal computer simultaneously. If using the remote control unit after the personal computer adjustment mode has been started up, start up the remote control unit adjustment mode or turn off the power once.

- When operating several multi-projection units simultaneously, do not press the buttons quickly and continuously as some units may not synchronize with the other units.

- Multi-projection units not assigned an ID cannot be operated using the remote control unit. To exit this state, perform one of the following.
  1. Start up the remote control adjustment mode using the [ADJ IN] button.
  2. Exit the remote control adjustment mode using the [ADJ OUT] button.
  3. Turn off the power.

- The remote control signal is output to the next unit via the link terminal only when a certain ID is set to the multi projection units. When operating several units, set this ID to all the units. Only units connected with the link cable located after the units to which the remote control unit is connected can be operated.

- Up to 16 units can be operated using the remote control at one time using the link cable. To operate more than 16 units, use a personal computer as well or reconnect the remote control.

- Handle the wire carefully.

Warning for Use of Dry Batteries ⚠

■ Using dry batteries incorrectly will result in battery liquid leakage, damage, etc. Take note of the following. (Also refer to precautions provided for dry batteries.)

- Load the ⊕ and ⊖ sides of the batteries correctly as shown on the battery case.
- Do not use old and new batteries together.
- Batteries of the same shape may have different voltages. Do not use different batteries together.
- When not using the unit for a long period of time (one month), remove the batteries to prevent battery liquid leakage.
  If leakage occurs, wipe the liquid thoroughly and load new batteries.
- Do not charge, short-circuit, disassemble, nor throw into fire the dry batteries provided.

6.2 External Control by RS-232C

As Multi projection unit is equipped with a RS-232C port, various controls and, white balance and convergence adjustments can be performed by an external computer.

By programming software ,it is possible not only to adjust White Balance,Convergence but to save and control the adjustment data of each source.

■ Interface

[1] Connector

D-sub 25-pin

[2] Pin assignment

PIN No.	Symbol	Signal Name
1	FG	Frame Ground
2	RXD	Received Data
3	TXD	Transmitted Data
5	CTS	Clear To Send
7	GND	Signal Ground

[3] Baud rate

4800 bps (1200, 2400, 9600, 19200 bps can also be selected)

[4] Data format

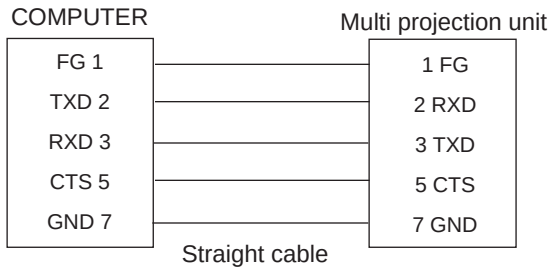
Start:1-bit

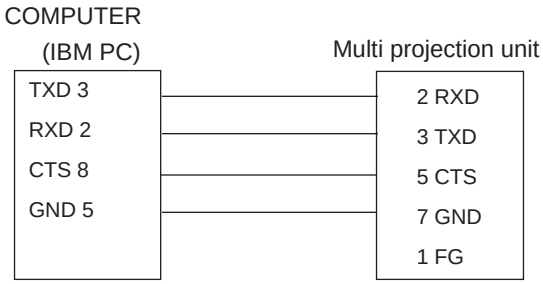
Data:8-bit

Parity:0 (No parity)

Stop:1-bit

[5]Connection





[6] Protocol

Multi projection unit from computer

stx	ID	COMMAND	etx

ID : 2-Byte(ASC ll)COMMAND : 3-Byte(ASC ll)

stx=02h etx=03h

stx	ID	COMMAND	COMMAND	COMMAND	etx

Up to 3 commands possible

stx	ID	COMMAND	ARGUMENT	etx

*

ARGUMENT : 3-Byte(ASC ll)

Note : * In case of the numeral direct command

Note:
For details on the list of RS-232C commands, refer to the Technical Manual for RM-V2550U.

■ PRECAUTIONS

[1] Contents of the INPUT FUNCTION, MULTI ON/OFF, COMBINATION ON/OFF, COLOR MODE 1/2, TV SYSTEM, CONV.MEMORY are memorized only when the power is turned OFF using the remote control, POF command, or the TACT switch on the rear panel, and finish the adjustment mode (if you were set each data in the adjustment mode).
(They will not be memorized by AC ON/OFF.)
When starting up/stopping the system by AC ON/OFF under the long term installation conditions, memorize the contents before executing AC ON/OFF.

[2]There is a limit to the RS-232C communication buffer in the unit. If too many commands are sent at once, it will not operate properly.

[3] The RS-232C command excecution time.
When sending RS-232C command, send the next command after minimum 500m sec.
Especially, the following commands need more than 500msec.
a) The assigned command of the POINT CONVERGENCE ADJUST POINT
1.5sec
b) IN1–3 (Input switching)
1sec
c) TVA,NTS,PAL (TV system setting)
1sec

If the next commands are sent before these time, they may not be received. Care when making programs like the direction.

[4] Exiting the personal computer adjustment mode
The personal computer adjustment mode is automatically exited when the following steps are performed.
a) When the rear panel switch is set.
b) When the power is turned OFF.
c) When the input signal is switched, the cable is disconnected, or the mode is switched: NTSC ⇔ PAL.
(However, in some cases, switching between PAL and no-signal may not exit the mode.)

To continue adjustments, set the re-adjustment mode again.

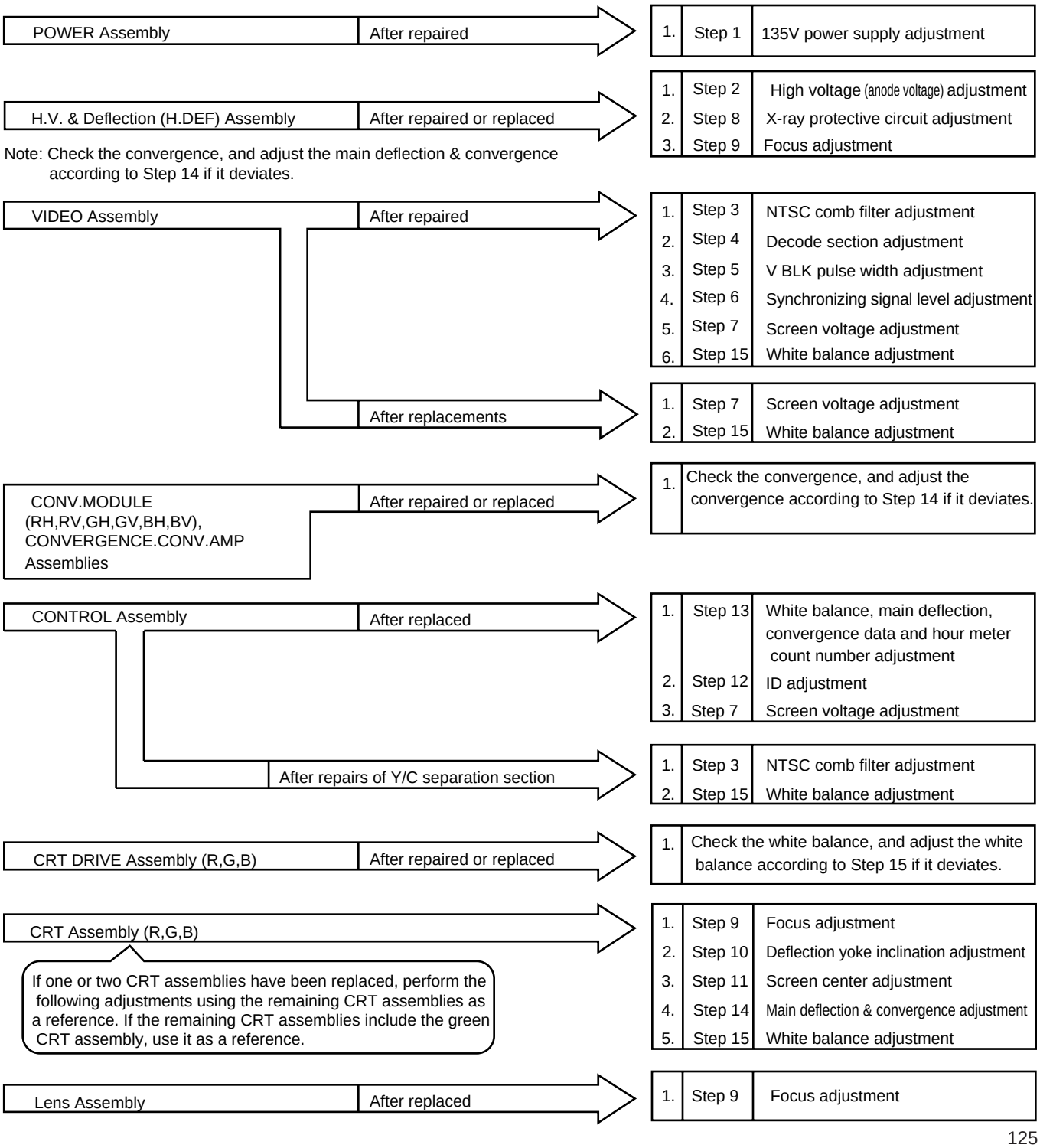
6.3 ADJUSTMENT OF EACH BLOCK

Adjustments should be performed according to the sequence described in this chapter. After repair, the adjustment method differs depending on the repaired assembly.

See Section "6.3.1 Adjustment Required After Repair or Replacement of Each Assembly" to confirm the items to be adjusted.

6.3.1 Adjustment Required After Repair or replacement of Each Assembly

Step No. corresponds to that in Section “6.3.2 Ajustment Each Part”.


POWER Assembly
After repaired
1. Step 1 135V power supply adjustment
H.V. & Deflection (H.DEF) Assembly
After repaired or replaced
1. Step 2 High voltage (anode voltage) adjustment
2. Step 8 X-ray protective circuit adjustment
3. Step 9 Focus adjustment
Note: Check the convergence, and adjust the main deflection & convergence according to Step 14 if it deviates.
VIDEO Assembly
After repaired
1. Step 3 NTSC comb filter adjustment
2. Step 4 Decode section adjustment
3. Step 5 V BLK pulse width adjustment
4. Step 6 Synchronizing signal level adjustment
5. Step 7 Screen voltage adjustment
6. Step 15 White balance adjustment
After replacements
1. Step 7 Screen voltage adjustment
2. Step 15 White balance adjustment
CONV.MODULE (RH,RV,GH,GV,BH,BV), CONVERGENCE.CONV.AMP Assemblies
After repaired or replaced
1. Check the convergence, and adjust the convergence according to Step 14 if it deviates.
CONTROL Assembly
After replaced
1. Step 13 White balance, main deflection, convergence data and hour meter count number adjustment
2. Step 12 ID adjustment
3. Step 7 Screen voltage adjustment
After repairs of Y/C separation section
1. Step 3 NTSC comb filter adjustment
2. Step 15 White balance adjustment
CRT DRIVE Assembly (R,G,B)
After repaired or replaced
1. Check the white balance, and adjust the white balance according to Step 15 if it deviates.
CRT Assembly (R,G,B)
If one or two CRT assemblies have been replaced, perform the following adjustments using the remaining CRT assemblies as a reference. If the remaining CRT assemblies include the green CRT assembly, use it as a reference.
1. Step 9 Focus adjustment
2. Step 10 Deflection yoke inclination adjustment
3. Step 11 Screen center adjustment
4. Step 14 Main deflection & convergence adjustment
5. Step 15 White balance adjustment
Lens Assembly
After replaced
1. Step 9 Focus adjustment

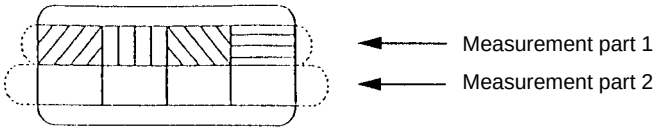
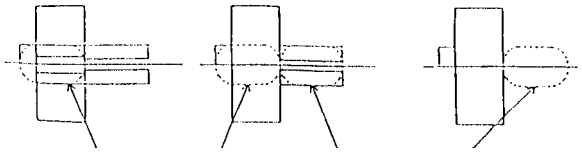
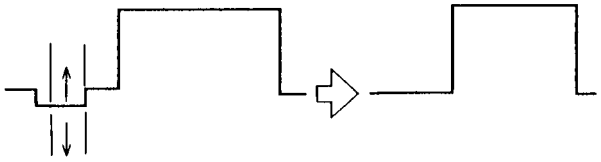
6.3.2 Adjustment Each part

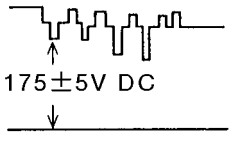
- For sections to be adjusted in each part and the TP terminal positions, refer to Fig. 6-1.
- G,R, and B shown in the columns "Sections to be adjusted" and "Adjusting method" are the abbreviations of green, red and blue respectively.
- A symbol in [ ] in the column "Sections to be adjusted" is the abbreviation of an assembly including the section to be adjusted.

The abbreviations are explained below.

V :VIDEO assembly
PS :POWER SUPPLY assembly
HV :H.V&DEFLECTION(H.DEF)assembly
CO :CONTROL assembly
VR :Focus variable resistor

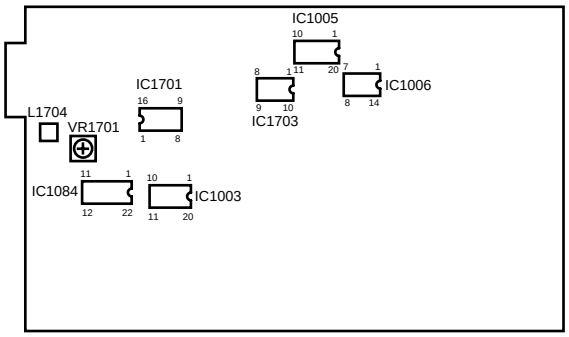
- The input signal is input to the "VIDEO" terminal on the rear panel unless otherwise specified.
- Set the picture quality during adjustment to "Standard" unless otherwise specified.

No	Adjustment	Input signal	Selection to be adjusted	Adjusting method
1	135V power supply adjustment	Color bar	VR5000 [PS]	Set the TP5036 <+135V> or TP5029 <GND> connector voltage to DC 135V ±0.5V.
2	High voltage (anode voltage) adjustment	Black burst	VR6004 [HV]	Note: Perform this adjustment only after the X-marked part is replaced. For the adjusting method, see Section "6.3.3 Adjusting The High Voltage Circuit".
3	NTSC comb filter adjustment	Color Bar	VR1701 L1704 [CO]	While observing the Y signal of Pin 11 of CN1701, minimize the 3.58MHz componenL2205 VR2201 [V]
4	Decode section adjustment	Demonstration pattern of Video S.G.(Philips PM5516)	L2205 VR2201 [V]	 Fig. a Observation point of waveform 1. Use L2205 to make the waveform of the measurement part 1 of pin 60 of IC2202 the same as shown in Fig. C. 2. Next, use VR2201 to make the waveform of the measurement part 2 the same as shown in Fig. d. 3. Repeat the above steps 1 and 2 several times. Confirm that the measurement part 1 of pin 62 of IC2202 is 50 mVp-p and that the measurement part 2 is 180 mVp-p or less.  Fig. b Before adjustment Fig. c After adjustment Fig. d After adjustment
5	V BLK pulse width adjustment	White 100%	VR2202 [V]	Observe the signal of TP2208 [V BLK],and rotate and adjust TR2202 so that the pulse width of V BLK becomes 710 ±20 µs.
6	Synchronizing signal level adjustment	White 100%	R:VR2205 G:VR2204 B:VR2203	Observe TP2209(R),TP2210(G),TP2211(B), and set the levels of the horizontal sync sections to the video pedestal level (OIRE). 

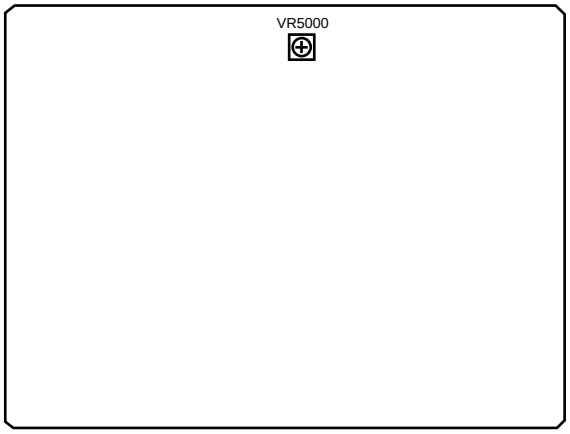
NO	Adjustment	Input signal	Selection to be adjusted	Adjusting method
7	Screen voltage adjustment	Black (OIRE)	Screen VR [VR]	1. Set the Low Light side of sample pulse at J4103 of cathode side in the G CRT DRIVE assembly to DC 180V using G focus VR of Focus VR.  2. Adjust R (J4004 or TP4004)and B (J4203) focus VRs in the same adjustment as G, respectively.
8	X-ray protective circuit adjustment	White 100%	VR6006 [HV]	**Note**: Perform this adjustment only after the X-marked part is replaced, For the adjustment method,see Section "6.3.3 Adjusting The High Voltage Circuit".
9	Focus adjustment	Crosshatch	Focus of the lens assembly installed in the CRT assembly of the replaced color and of the focus variable resistor [VR]	•Move the lens assembly to the left and right to optimize the focus. • Rotate the focus VR to optimize the focus. • Repeat adjusting the lens assembly and focus VR. **Note**: Perform the following adjustment only after the blue focus is adjusted. Rotate the blue focus VR counterclockwise to slightly thicken the blue to a degree where the blue does not exceed the crosshatch on the screen. As a reference,rotate the focus VR by about 10 degrees.
10	Deflection yoke inclination adjustment	Monoscope or crosshatch	Position for installing the deflection yoke of the replaced color (left and right inclinations)	**Note:** Perform this adjustment after the CRT assembly or deflection yoke is replaced. •Loosen the screws fixing the deflection yoke of the replaced color and match the inclinations of the vertical and horizontal lines at the center of the screen to those of one of the existing colors by rotating the yoke to the left and right. •After adjustment, tighten the screws to fix the deflection yoke.
11	Screen center adjustment	Monoscope or crosshatch	Centering magnet of the deflection yoke of the replaced color	**Note**: Perform this adjustment to match the screen center point after the CRT assembly or deflection yoke is replaced. •Move the centering magnet of the deflection yoke of the replaced color to match the vertical and horizontal lines at the center of the screen to those of one of the existing colors.
12	ID assignment			Assigns the ID by the RS-232C command or Remote command unit.
13	White white balance,main deflection & convergence data and hour meter count number adjustment	_	_	Before exchange of the MICRO-COMPUTER assembly, read the following data (① to ③)and write them to the installed assembly after the exchange. ① White balance data, 6 ways ② Main deflection & convergence data, 4 ways ③ Hour meter count number
14	Main deflection & convergence adjustment	Crosshatch		• Compensate the green line so that the green crosshatch screen is normally displayed while only the green CRT drive assembly is operated. • Compensate the red line so that it matches the green line on the crosshatch screen while the green and red CRT drive assemblies are operated. • Compensate the blue line so that it matches the green line on the crosshatch screen while the green and blue CRT drive assemblies are operated. **Note**:For the detailed adjustment of the convergence, see Section "6.6.3.3 Main Deflection & Convergence Adjustment".
15	White balance adjustment	_	_	Install in the multi-screen and adjust according to the adjustment method shown in 6.6.4 After completion of the adjustment, memorize the standard setting.

• Adjustment point

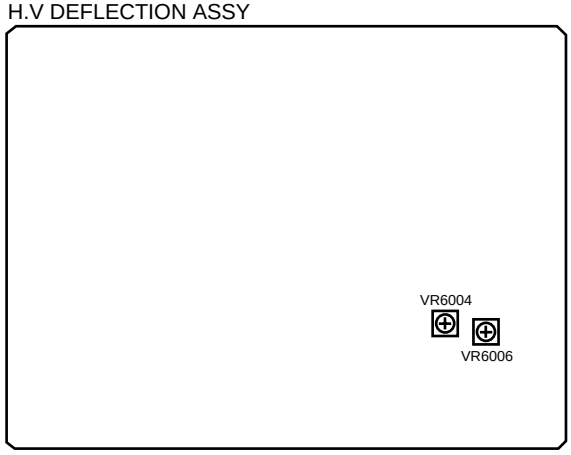
CONTROL ASSY



POWER ASSY



H.V DEFLECTION ASSY



VIDEO ASSY

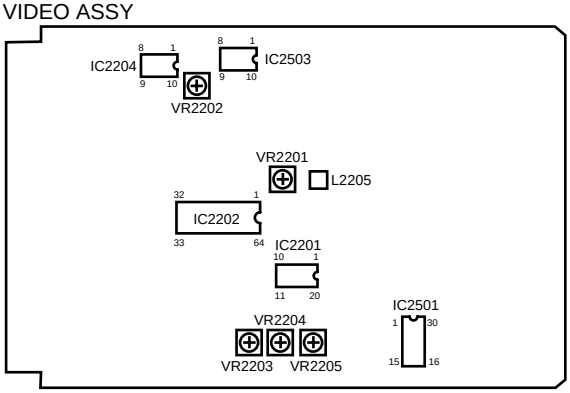


Fig.6-1 Adjustment point

6.3.3 Adjusting The High Voltage Circuit

- Observe safety precautions while working with high voltage.
- Be sure to work according to the procedures to prevent exposure to X-ray radiation.
- Prepare the VR tool before adjusting the X-ray protective circuit.

(a) Parts related to the high voltage circuit
(part with "X"mark in the service manual)

H.V & DEFLECTION (H.DEF) (AWV1669)	Adjustment required after replaced
T6004,VR6006,R6120, R6135,D6015	X-ray protective (*1)
T6004,VR6004,R6071,R6087	High voltage circuit (*1)

Note:

*1 : Always adjustment the X-ray protective circuit first after the flyback transformer (T6004) is replaced.

(b) Preparation before adjustment

- Before replacing the parts related to the high voltage circuit, remove the shield cover (ANH1166) enveloping the semi-fixed resistor (VR6004 and VR6006).

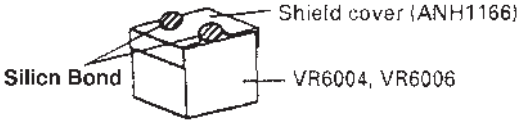


Fig.6-2 Shielded Cover of the Semi-fixed Resistor

Note:

The semi-fixed resistors are covered with a glass tube.
Adjustment should be performed without removing the glass tube.Otherwise, the adjusted value can change when the glass tube is replaced.

■ Anode Cable Connection and Disconnection

Serviceman warning

Before removing the anode cable,turn off the power,unplug the AC plug and let the unit discharge for more than 1 minute.

Disconnect the FBT anode cable as outlined in Fig.6-3 Confirm the position of the rubber cover before disconnecting the cable, then it is easy connect the anode cable after the anode voltage is measured. When connecting the anode cable, proceed in the reverse order as mentioned above. Confirm that the cable will not come off by pulling it after the cable is connected.

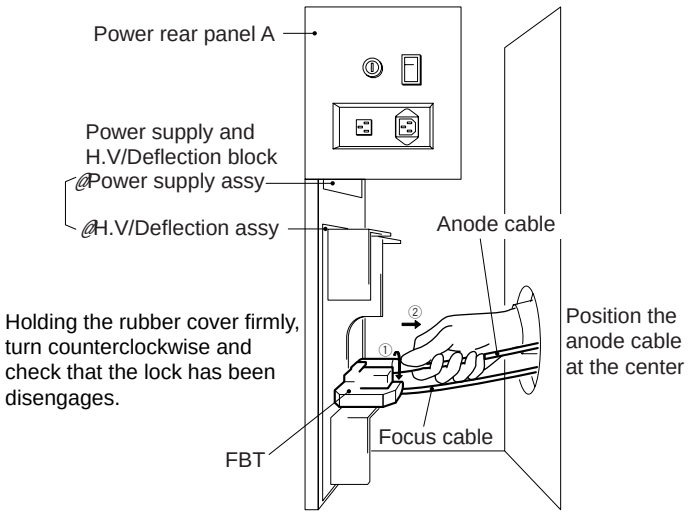

Power rear panel A
Power supply and
H.V/Deflection block
Power supply assy
H.V/Deflection assy
Anode cable
Holding the rubber cover firmly, turn counterclockwise and check that the lock has been disengages.
Position the anode cable at the center
Focus cable
FBT

Fig. 6-3 Disconnecting the Anode Cable

■ Connecting the high voltage meter (digital multimeter :7537-04) and high voltage distribution tool (GGF1237)

As shown in Fig. 6-4, connect the anode cable to the high voltage distribution tool connector, the anode cable of the high voltage distribution tool to FBT, and the high voltage probe of the high voltage meter (digital multimeter:7537-04) to the high voltage distribution tool.

Note:

Accurately connect the cables. Incomplete connection causes the FBT to be overloaded, so that excessively high voltage is generated as the FBT output. It is extremely dangerous.

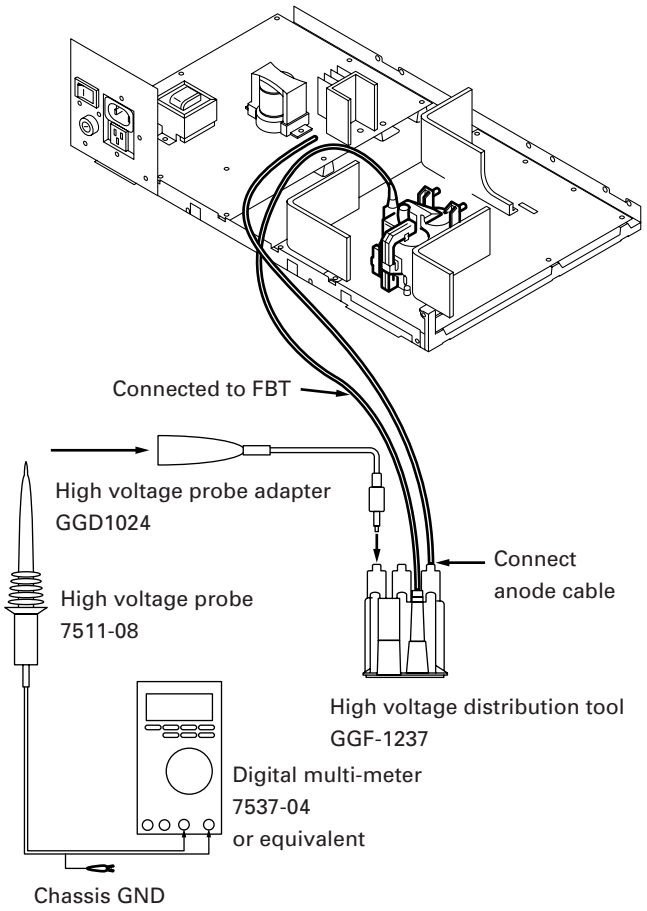


Fig. 6-4

■ Adjusting the X-ray Protective Circuit

1. Rotate VR of the VR tool decreasing the high voltage direction to the end,and connect the VR jig to TP6010 and TP6011 of the H. V & DEFLECTION assembly.

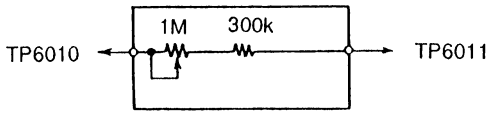


Fig. 6-5 VR Tool

2. Rotate VR6006 of the H.V & DEFLECTION assembly counter-clockwise to the end.
3. Connect the AC power cord to the outlet and turn the power ON.
4. Input the white 100% (full-field) signal. Set to CONT 30.
5. Rotate VR of the tool to set the anode voltage (of the high voltage meter) to 33.5kV.
6. Slowly rotate VR6006 clockwise, and stop where the X-ray protective circuit starts operating (the power is turned OFF).
7. Disconnect the AC power cord from the outlet, and wait for 10 seconds.
8. Rotate VR of the tool to previous position as the step 1.
9. Connect the AC power cord to the outlet, and turn the power ON.
10. Slowly rotate VR of the tool to set the high voltage meter value to 33.3 kV. Retain this value for about 10 seconds to confirm that the X-ray protective circuit does no operate. If it operates, restart the adjustment from Step 2.
11. Slowly rotate VR of the tool further to confirm that the X-ray protective circuit operates before the high voltage meter value reaches 33.8 kV.If it does not operate beyond 33.8kV, restart the adjustment form Step 2.
12. Disconnect the AC power cord from the outlet, and remove the VR tool from the H. V & DEFLECTION assembly.
13. Return the CONT value to the original value.

■ Adjusting the High Voltage (Anode Voltage)

1. Rotate VR6004 of the H. V & DEFLECTION assembly counter-clockwise to the end.
2. Input the black burst signal to the input terminal.
3. Connect the AC power cord to the outlet, and turn the power ON.
4. Confirm that the input selector corresponds to the input terminal to which the black burst signal is input.
5. Slowly rotate VR6004 clockwise to adjust the high voltage meter value to 30.5 kV ±0.05 kV.
6. Turn the power off, and disconnect the AC power cord from the outlet.

■ Postprocessing

- Be sure to reinstall and solder the shield cover (ANH1166) of the semi-fixed resistor (VR6004 or VR6006) removed before adjustment.
- Remove the high voltage distributor, and confirm that the anode cable is correctly connected to the FBT if installed.(See Section “■Anode Cable Connection and Disconnection")

6.4 ADJUSTMENT PREPARATIONS

6.4.1 Wiring

① Connection of Power Supply

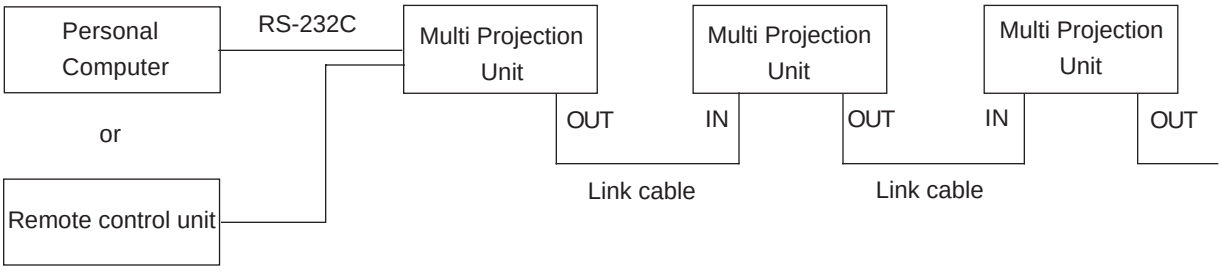
- The power supply can be connected to up to 3 units in a series using the AC outlets of Multi projection units. Connect the three units as one system to the external outlet.
- The AC plug of Multi projection unit is a 3P with a ground pin. When connecting it to a normal outlet, use an exclusive 3P AC adapter.
- The AC plug of Multi projection unit is a 3P with a ground pin. To prevent electric shocks, connect the ground pin to the ground when connecting the power supply.

② Connection of signal cable

- Use coaxial cables. Normally, if less than 15m, use 3C-2V. If less than 30m, use 5C-2V.
  The signal transmission equipment and Multi projection units should be as close as possible to each other.

③ Connection of ABL link cable

- By connecting the ABL link cables in cascade form, control signals (RS-232C, remote control signal) can be transmitted to all the units.



(Up to 16 units can be operated using the remote control unit at one time using the link cable.)

6.4.2 Wiring Handling

- Except for short-term installations such as events, etc., in normal long-term installations, adjust the length of the wiring appropriately taking into consideration the overall route to be wired.

- Make sure the connection terminals are not subjected to direct weight and force. Tie the wires up in short-term use and bind them up properly in long-term use.

6.4.3 Aging

- After turning on the power, input the 100% white signal or moving images, and perform aging until Multi projection unit stabilizes (about 1 hour). If adjustments are performed without aging, as it takes time until Multi projection unit will warm up and stabilize, convergence and white balance will become incorrect.

6.4.4 Adjustment Signals

- Use the composite video signal for adjustments created in the multi video processor. When converters not creating the signals for adjustment are used, supply the signals for adjustment from equivalent signal sources (signal generator, LD player, etc.)

• Generally Required Signals

Adjustment	Signal Name
• Screen center Screen size adjustment	Monoscope
• Convergence adjustment	Crosshatch Tilted crosshatch
• White balance adjustment	White signal (Can be linearly varied between 0% and 100%) Or window step
• Linear white adjustment	Crosshatch
• Total adjustment (Color, tint, etc.)	Moving image (scenery, faces) Color-bar, etc.

6.4.5 Equipment Required for Adjustments

The following are required for the adjustments performed during the set-up of Multi projection unit.

Equipment	Role	Required Function	Recommended Model	Remarks
Personal Computer	For adjusting	RS232C communication function		
Adjusting remote control	For adjusting		Pioneer RU-V107	Prepare a Personal Computer or this remote control for adjustment.
Signal generator	For generating white balance and color tint adjusting signals	Gray scale White (% variable)		Especially white (% variable) is important. (Cannot replace with LD, etc.) Use signal generators of this class at the least.
Adjusting LD	Total image quality adjustment	High definition image Picture of beauty Various adjustment signals	LD demonstration 2 (Not for sale)	Perform color, or final and overall adjustments with the actual images.
LD player	For playing adjusting LD	With still function	Pioneer LD-V4400	
Cable	For connecting RS-232C	D-Sub 25-pin (male) straight cable		The length differs according to the place adjustment is performed at, but prepare at least 10 m.
	For connecting video			
Adjusting LD	For generating signals for adjusting size, convergence	Monoscope Crosshatch	Test disc GGT 1072	Use for adjusting screen size and center.

6.5 BEFORE ADJUSTMENTS

6.5.1 Convergence Adjustment Memory

The multi projection unit incorporates four convergence adjustment memories. These can broadly be divided into the adjustable memory (Memories 1 to 3) and dedicated memory for reading adjustment values set at shipment (FACTORY).

Memory Area / Input Signal	1	2	3	FACTORY
NTSC	○	○	○	◎
PAL	○	○	○	◎

○ : Enable to select.

◎ : Disable to select. Only possible to read out to the memory area enable to select.

The following adjustment data are input to each memory area at shipment.

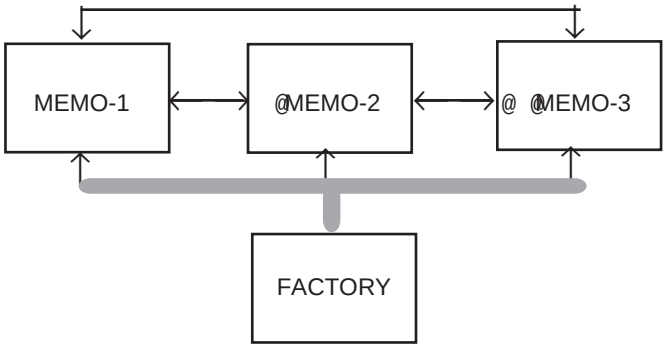
MEMO-1 : For NTSC signals
MEMO-2 : For PAL signals
MEMO-3 : For NTSC signals (Same data as MEMO-1)
-------- For PAL signals(Same data as MEMO-2)
FACTORY: For NTSC signals (Same data as MEMO-1)
-------- For PAL signals(Same data as MEMO-2)

For some input signals, NTSC and PAL are selected automatically.

When a NTSC signal is input : MEMO-1
When a PAL signal is input : MEMO-2

Copying the Convergence Memory

The convergence memory can be copied by the remote control unit or PC. (See figure below.)



When data is copied, the memory into which the data is copied will lose its original data. (For example, when data is copied from MEMO-1 to MEMO-2, MEMO-2 will becomes the memory for the NTSC signal, and lose the PAL signal.)

When the data has been copied into the selected convergence memory area, this can be known by the display [COPY END] on the screen. In that case, the data of the convergence has been changed into new data. If the data is not same,the convergence will change as well.

Example : When MEMO-1 is selected

MEMO-1 → Copy to other memories : Completed when [COPY END] is displayed on the screen.

MEMO-1 ← Copy to other memories : Completed when [COPY END] is displayed on the screen and at the same time convergence deviates.

Condition : MEMO-1 data ≠ MEMO-2 data

6.5.2 TV System

The TV system determines the control of the whole unit (convergence, OSD display select, video system select, deflection) according to the signal input.
Set it according to the signal input.

When TV SYSTEM is set to AUTO
- The mode is automatically set to NTSC or PAL according to the input signal (NTSC/PAL).

When the TV SYSTEM is set to NTSC
- The mode is set to NTSC regardless of the input signal.

When the TV SYSTEM is set to PAL
- The mode is set to PAL regardless of the input signal.

[Precaution to use]

Normally, the TV SYSTEM is set to AUTO. If the signals cannot be differentiated between NTSC and PAL (or they are differentiated incorrectly : VTR signal repeatedly dubbed or part of CATV converter, etc.), the TV SYSTEM is set to NTSC or PAL according to the input signal.

When the input signal is NTSC or PAL, and the TV SYSTEM is set to NTSC or PAL, it can enable the input to be switched smoothly (little screen noises), and prevent signals from being differentiated incorrectly due to signal disturbances and cuts.

In some cases, even if the same TV format is used, more than two types of convergence data will be required. (For example, when there are signal phase differences for every input source, etc.) In such cases, use two types of memories. Switch them using the personal computer.

6.5.3 White Balance Adjustment Memory

ADJUSTMENTS has altogether six white balance adjustment memories.

Color mode 1 (Normal)
- VIDEO, Y/C input memory
- RGB input memory
- Factory shipment memory

Color mode 2 (Re-expose)
- VIDEO, Y/C input memory
- RGB input memory
- Factory shipment memory

Four memories can be actually adjusted except the factory shipment memory. The factory shipment memory contains the normal white balance adjustment data and re-expose white balance adjustment data.
By setting to color mode 1 using the rear panel switch, etc., the white balance adjustment data can be switched by synchronizing with input switching. This is the same for color mode 2. If it is necessary to change color mode 1 and 2 in the same input function or VIDEO , Y/C input, connect the PC and switch each time by command (CM1,CM2).

6.5.4 Combined Use of Remote Control and Personal Computer

Although it is possible to connect both the remote control (RU-V107) and Personal Computer, adjustments cannot be performed using both at the same time.
Remote control, Personal Computer commands and rear panel switches operated the latest are given priority. When the adjustment mode is set by the Personal Computer while adjusting with the remote control, the adjustment mode will be set by the Personal Computer, disabling adjustments to be performed using the remote control. If the adjustment mode is set by the remote control using adjustments by the Personal Computer, adjustments by the Personal Computer will be disabled. Furthermore, if the rear panel switches are operated when the adjustment mode is set by the remote control or Personal Computer, the adjustment mode is exited and the rear panel switches operations are started.

6.5.5 Memory of Adjustment Data and Settings

When adjustments are ended in the adjustment mode such as convergence, white balance, etc., always exit the adjustment mode (AJN for Personal Computer, ADJ OUT key for remote control). If the power is turned off (AC OFF) without exiting the adjustment mode, a part of the adjustment data will not be preserved in the memory.
The input function, MULTI ON/OFF (peripheral light amount switching), COLOR MODE 1/2 (white balance switching), COMBINATION ON/OFF (ABL link switching), VIDEO MUTE ON/OFF (VIDEO MUTE of input switching), baud rate setting, TV SYSTEM setting, and convergence memory state setting will be preserved in the memory only when the power is turned off using the remote control, command of a Personal Computer (POF) or the rear panel tact switch, and finish the adjustment mode (when you set each data in the adjustment mode.) (The Main Power SW ON/OFF or AC ON/OFF by the external SW will not allow data to be preserved in the memory.)
When starting or stopping the system by AC ON/OFF in an installation condition for demonstration, use this method to preserve the conditions in the memory first and confirm the initial condition by AC ON/OFF.

The following phenomena may occur when discharge occurs.
Example : During performance in which inputs are switched using the personal computer (VIDEO ⇔ RGB)
When discharge occurs, RGB is switched to VIDEO.

This phenomenon occurs because at the same time discharge occurs, the INPUT set is initialized in the previous memorized state (in this example, it is the VIDEO input). Therefore pay careful attention when using the memory.

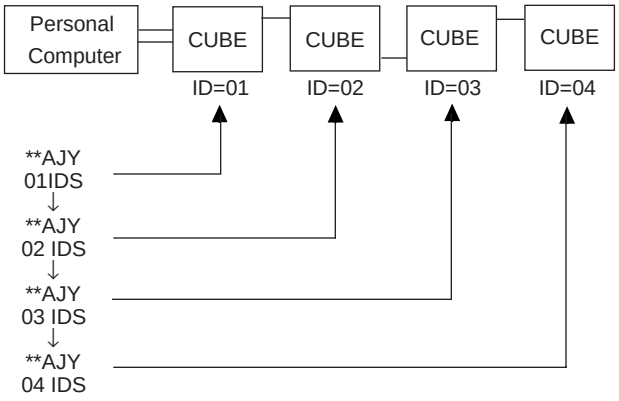
6.5.6 Giving IDs

When several Multi projection units are used to compose the 4 screens or 9 screens (multi-screen), the ID is used to differentiate between Multi projection units. When the units are given IDs, by connecting the ABL link cable, commands can be transmitted by specifying the ID, and it is possible to operate only Multi projection unit corresponding to that ID by remote control operations.
The power turns on at different timings according to the ID value given.
(For details on the time set according to the ID value, refer to the Technical Manual.)

<Giving IDs using Personal Computer>

Commands: IDC (IDC CLEAR) ;Clears the ID given
IDS (ID SET) ;Gives an ID
The IDS is valid only when no ID has been given. It will be valid from units nearest to the personal computer (remote control).

(Example) 4 screens • When giving IDs first using Personal Computer.



By sending commands in this order, IDs can be given to each Multi Projection Unit (connect ABL link cables as above example).

The characters that can be used for the IDs are 0 to 9 and A to F, and * (capital and small letters are not differentiated).
The * can be used in the following way.

** IDC : Clears IDs given to all units
*0AJY : Only units which have IDs whose 2nd digit is 0 enter the adjustment mode.
3* IN1 : The input function of only units which have IDs whose 1st digit is 3 is set to VIDEO.

<Giving IDs Using the Remote Control>

[1] Press the ADJ IN key to set the whole screen into the adjustment mode.
[2] The main menu will be displayed. Press the 1 key.
Select “1. ID SET/CLEAR/SELECT”
[3] Check that the ID display at the top left of the screen is “– –” and press the 1 key.
Select “1.ID SET”.
If an ID has already been given, press the 0 key and select “0. ID CLEAR” of the main menu. To clear the ID, press the 5 key. Next, return to ‘’[1] Enter the adjustment mode.” and give the ID.
[4] As the ID input standby state is set, press the 0 to 9, A to F keys, and input the ID.
[5] To use the multi-screen unit, return to “[1] Enter the adjustment mode.” and given an ID to the next unit.

Note) To return the whole screen to the main menu after giving IDs to the whole screen, press the ADJ IN key.

<Selecting the ID Using the Remote Control>

Select the screen to be adjusted using the remote control.
Example) Select the ID at the bottom left side of the screen (ID=03) as shown in the figure below.

[1] Set all screens to the adjustment mode using the ADJ IN key .
[2] Select [1. ID SET/CLEAR/SELECT using the 1 key.
[3] Select [2. ID SELECT] using the 2 key.
[4] Press the 0 and 3 keys (ID=03).
[5] Only the bottom left side of the screen shows the main menu. The other screens will set into the standby state (POWER, ADJ IN, ADJ OUT keys only are accepted).

ID = 01	ID = 02
ID = 03	ID = 04

- To return to the main menu after completing ID SELECT, press the MAIN MENU key to keep the ID SELECT state.

  Pressing the ADJ IN key will also return to the main menu, but it also clear the ID SELECT state, making it necessary to repeat from step [1] again.

  To select other screens, press the MAIN MENU key to return to the main menu, and change the ID number set at step [4] above.

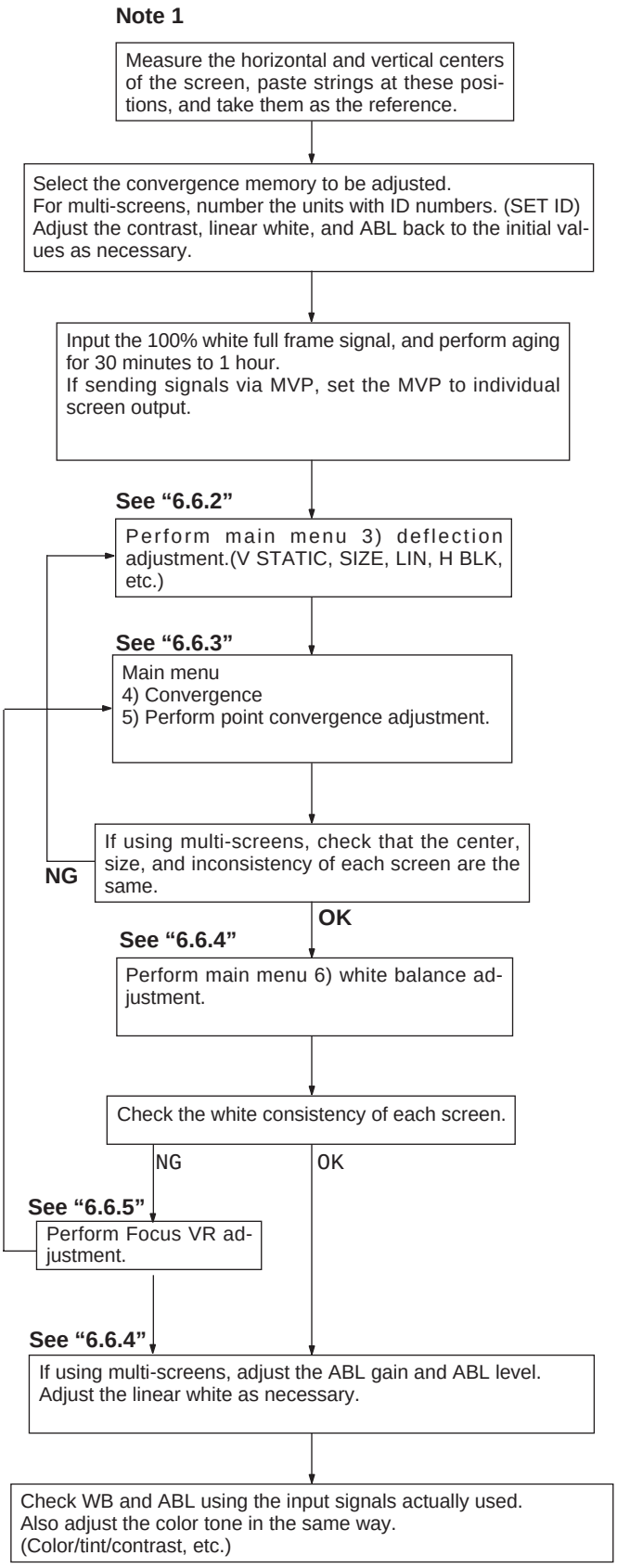
Note : When the wrong ID has been specified
Repeat the above steps [1] to [5].
Perform the same steps when an inappropriate ID (Example : ID=33, etc. in the above screen) has been input. In this case, all screens will set into the standby state.

<Precautions for Giving IDs using the Remote Control and Personal Computer>

Communication cannot be performed with units connected using the ABL link cable, after units whose IDs have been cleared. When the command “** IDC” shown in the figure on the previous page is performed, only the first unit can be controlled. Using the command “01 IDS” will enable the 2nd unit and onwards to be controlled.
When IDs are set as this, the unit connected next can be controlled.

6.6 SCREEN ADJUSTMENT

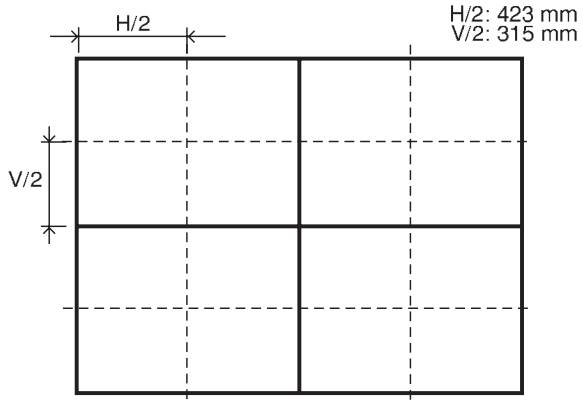
Screen adjustment flowchart


Note 1
Measure the horizontal and vertical centers of the screen, paste strings at these positions, and take them as the reference.
Select the convergence memory to be adjusted.
For multi-screens, number the units with ID numbers. (SET ID)
Adjust the contrast, linear white, and ABL back to the initial values as necessary.
* Contrast:128
ABL gain:MAX (255)
ABL level:128
Linear white:MAX (255)
Input the 100% white full frame signal, and perform aging for 30 minutes to 1 hour.
If sending signals via MVP, set the MVP to individual screen output.
*Be sure to perform this to stabilize the heat of the unit and prevent CRT sticking.
See "6.6.2"
Perform main menu 3) deflection adjustment.(V STATIC, SIZE, LIN, H BLK, etc.)
*To change the current flowing through the deflection coil, the three CRTs must function together.
See "6.6.3"
Main menu
4) Convergence
5) Perform point convergence adjustment.
*Adjust for each color.
If using multi-screens, check that the center, size, and inconsistency of each screen are the same.
NG
*Output the crosshatch signal to each screen and check.
OK
See "6.6.4"
Perform main menu 6) white balance adjustment.
Check the white consistency of each screen.
*Display the 100% white and observe the white uniformity.
NG
OK
See "6.6.5"
Perform Focus VR adjustment.
*Adjust the blue focus VR so that the focus is slightly deviated on the left side of the screen.
See "6.6.4"
If using multi-screens, adjust the ABL gain and ABL level.
Adjust the linear white as necessary.
Check WB and ABL using the input signals actually used.
Also adjust the color tone in the same way.
(Color/tint/contrast, etc.)

6.6.1 Measurement of Screen Center

Measure the screen center.

Measure the horizontal and vertical screen centers and paste strings, etc. at these positions.



2 x 2 Example

6.6.2 Deflection Adjustment

Perform deflection adjustment.

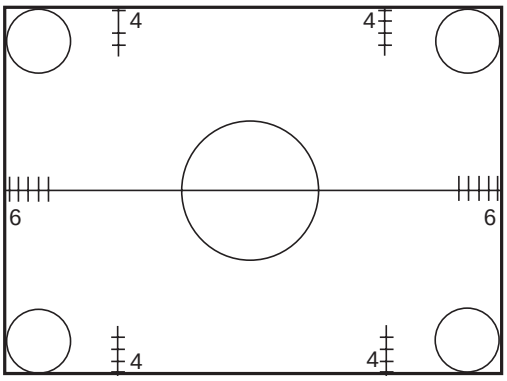
Using the CUBE adjustment disc GGT1072 and test disc GGV1013, roughly adjust the center, size, and linearity of the screens.

(As the horizontal static and linearity are not adjusted in the deflection adjustment, adjust them at the convergence G STATIC and G LINEARITY of menu 4.)

As this adjustment is an adjustment of the deflection coil, the three beams (R, G, and B) will function together.

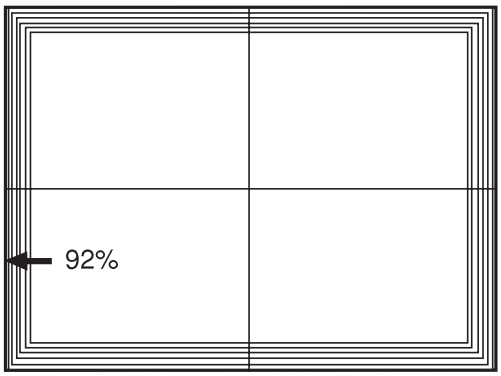
Consequently, erase B and R, and observe only G and adjust.

Monoscope (GGV1013)



For the horizontal direction, adjust to where the 6th line can be seen.
For the vertical direction, adjust to where the 4th line can be seen.

Frame (GGT1072)

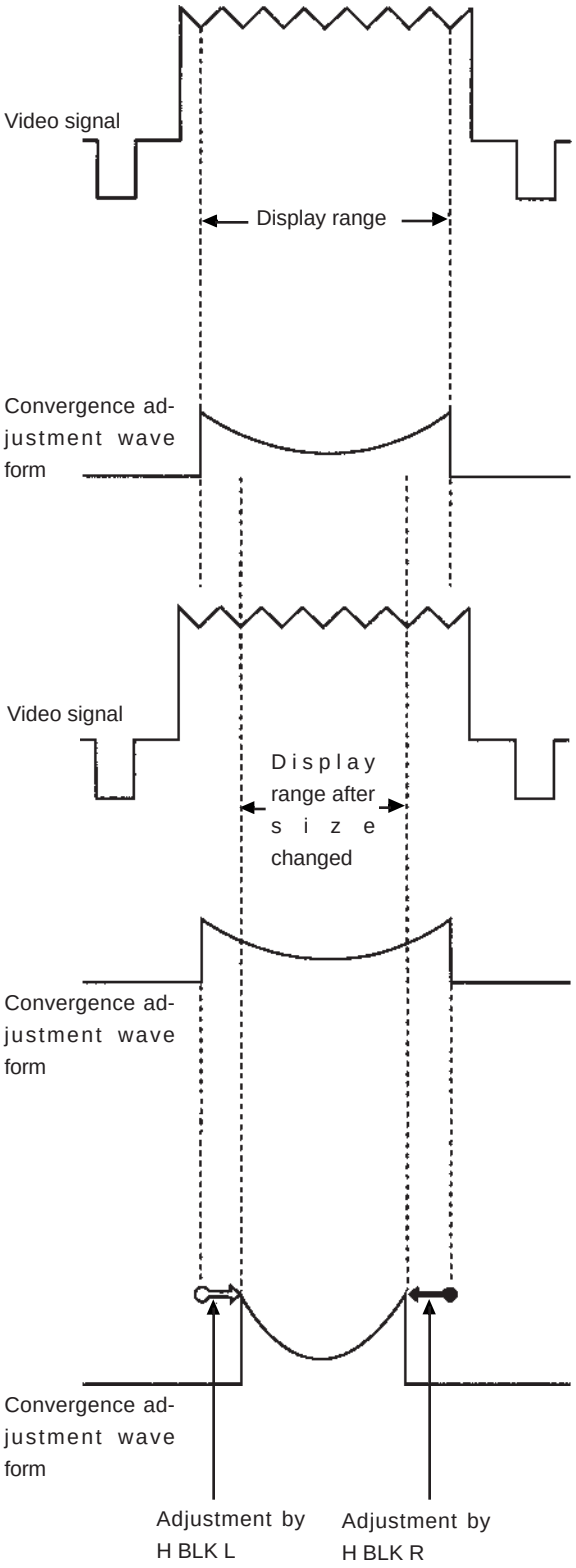


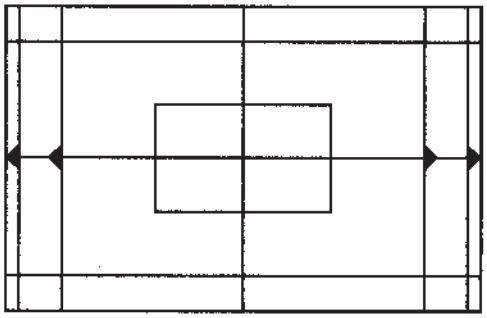
For the horizontal direction, adjust to where the 6th line can be seen.
For the vertical direction, adjust to where half of the 6th line can be seen.

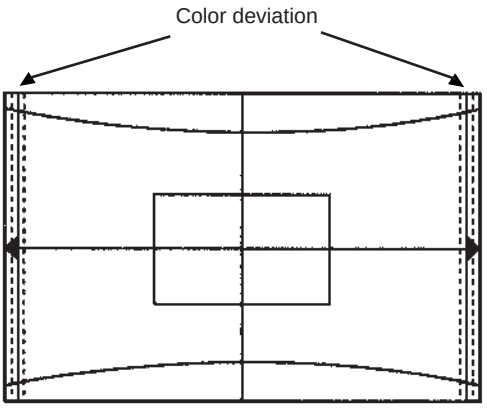
If very bad distortion is seen on the left or right side of the screen, adjust using H BLK R and H BLK L.

■ H BLK L and H BLK R Adjustments

H BLK L and H BLK R adjustments are performed to obtain the optimum convergence adjustment wave form when the display range changes due to changes in the H SIZE.







When size is increased with H BLK L and H BLK R not adjusted.

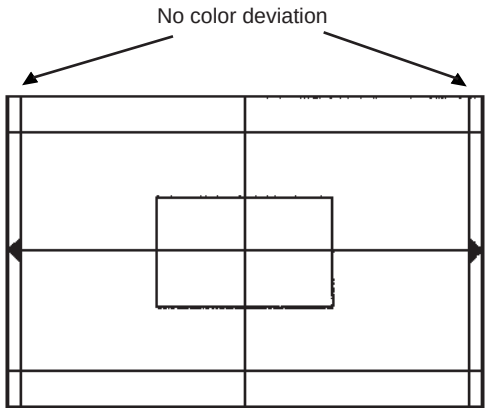
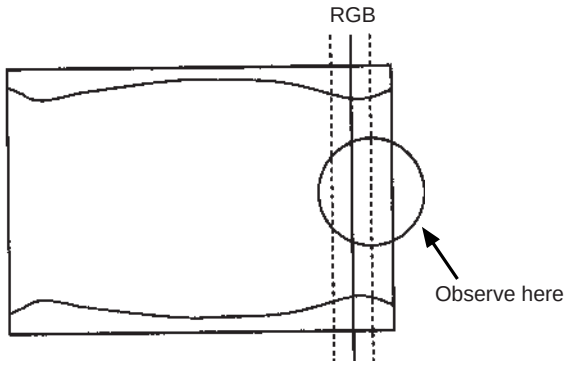
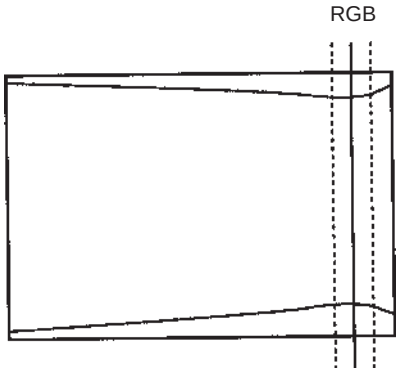


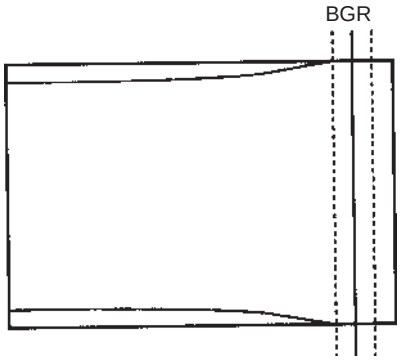
Image after H BLK L and H BLK R has been adjusted.

● H BLK R Adjustment

Output all three colors R, G, B, observe the right side of the screen, and adjust with H BLK R so that the color stops deviating.



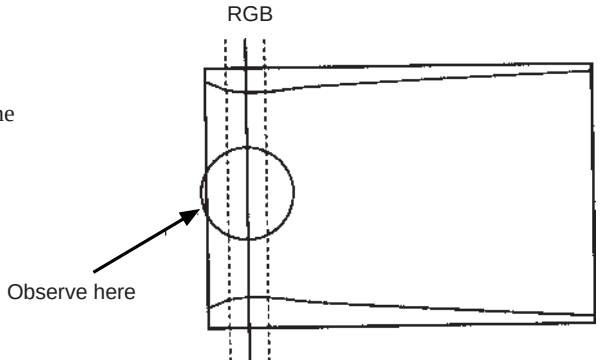




When H BLK R adjustment is not properly performed

● H BLK L adjustment

Output all three colors R, G, B, observe the left side of the screen, and adjust with H BLK L so that the color stops deviating.



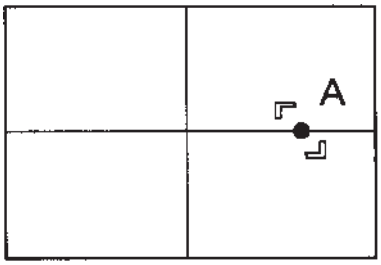
NOTE

There are points at which the screen does not move even through the H BLK L value changes. This is not a malfunction.

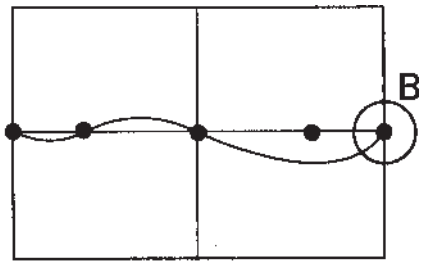
● **Confirming the Optimum H BLK L, H BLK R Values**

Optimum H BLK R value

OSD display

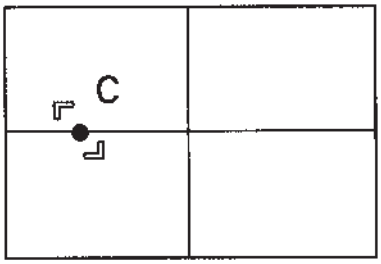


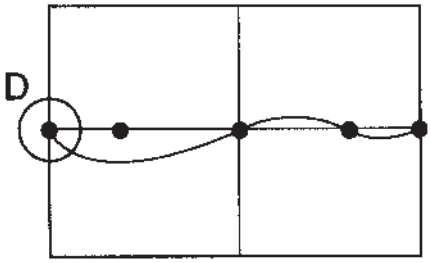
Movement on screen



When point A is lowered by point convergence, point B should not move.

● **Confirming the Optimum H BLK L Value**





When point C is lowered by point convergence, point D should not move.

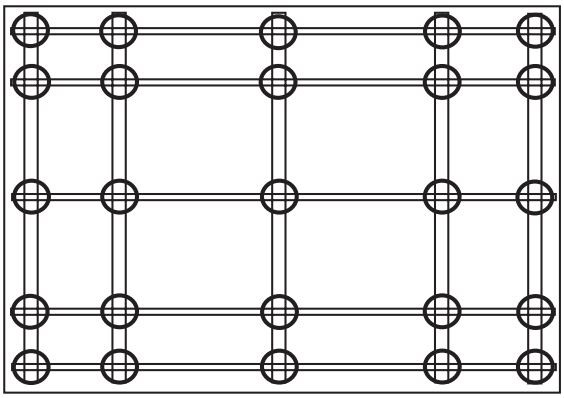
Note

Convergence can be adjusted even if the optimum values are slightly different from the above optimum values during adjustments. But, if the screen changes markedly, re-adjust H BLK L or H BLK R, and adjust the convergence.

6.6.3 Perform convergence adjustment.

Using the CUBE adjustment disc GGT1072 and test disc GGV1013, input the cross-hatch signal.
Display only G, and adjust the G point convergence so that the horizontal and vertical lines become straight.
(Also adjust so that the size and linearity in both directions are equal.)
After adjusting G, display R, and adjust so that the R line moves onto the G line in the R point convergence adjustment.
After adjusting R, display B, and adjust B point convergence so that B overlaps with G.

Adjusting Points



In point convergence adjustment, the 25 points set on the screen can be adjusted independently.
In addition, the area (line) can also be adjusted at ten areas.

- The adjusting points set according to the circuit are fixed at the positions shown in the figure. In some cases, the OSD display may be deviated, but the actual adjusting points are as shown in the figure.
- If the difference between an adjusting point and the next point is a cause of concern, resolving the deviation of the points will resolve this problem.
- For some adjusting points, the adjustment may not be pos sible in one direction.
  In this case, the convergence value may be set to MAX or MIN.
  Find the item set to MAX or MIN in menu 4) convergence, and correct the value, or, read the FACTORY data, and ad just again.

6.6.3.1 POINT CONVERGENCE ADJUSTMENT MODE

⌜ ⌟ is displayed at the center of the screen. This indicates the point to be adjusted, and it is moved left/right and up/down with the keys [2△], [4◁], [6▷], and [8▽]. Further, for adjustment of the convergence of that point, adjustment is made with [▲], [▼], [◄/–] and [+/►].

Red, green, or blue can be selected as the adjustment color by pressing [R ADJ ON/OFF], [G ADJ ON/OFF], or [B ADJ ON/OFF].

- Output method for red, green, and blue as single colors to use the remote control unit.

  [R ADJ ON/OFF] key to ON/OFF ..... Turns red color ON/OFF.

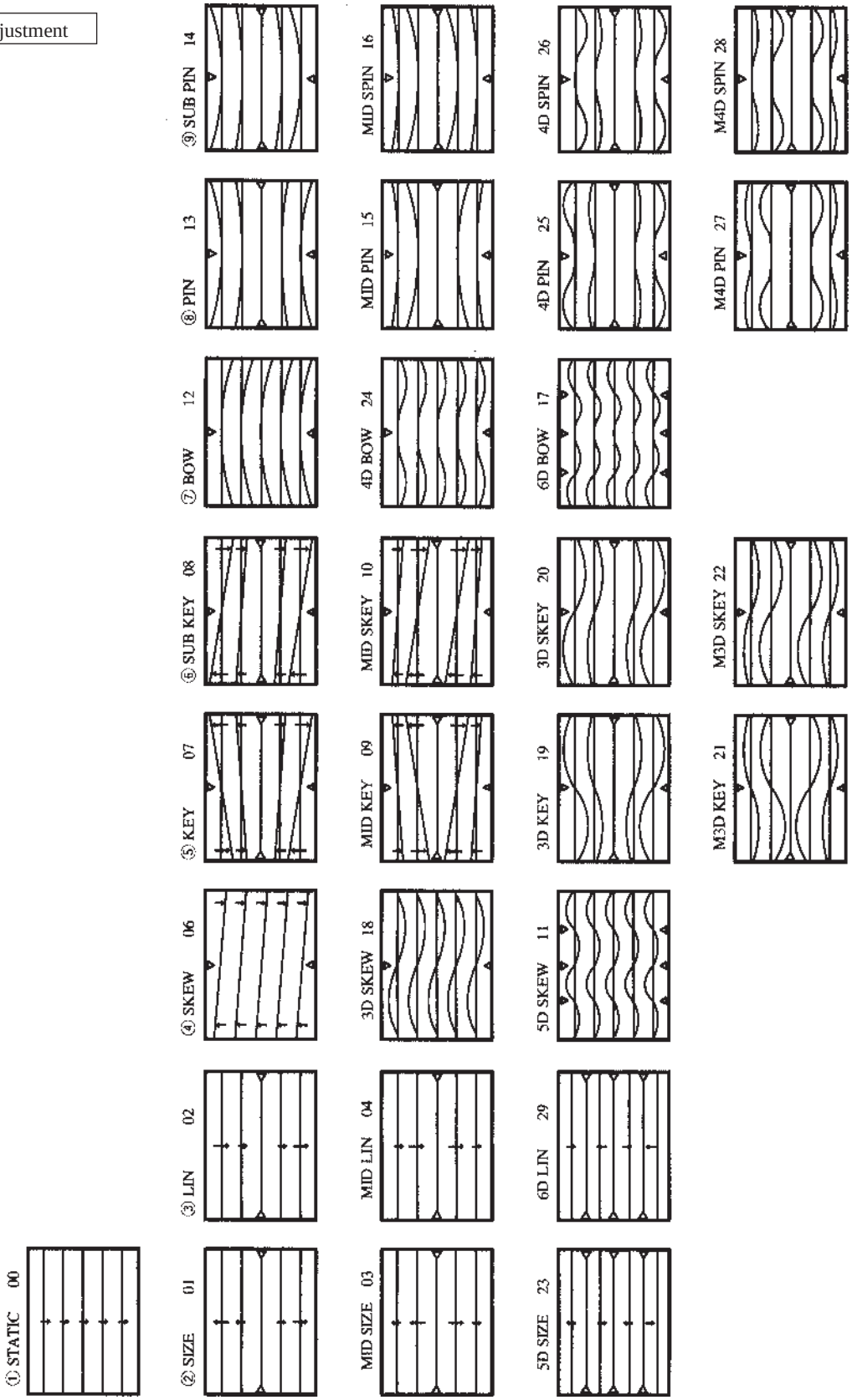
  [G ADJ ON/OFF] key to ON/OFF ..... Turns green color ON/OFF.

  [B ADJ ON/OFF] key to ON/OFF ..... Turns blue color ON/OFF.

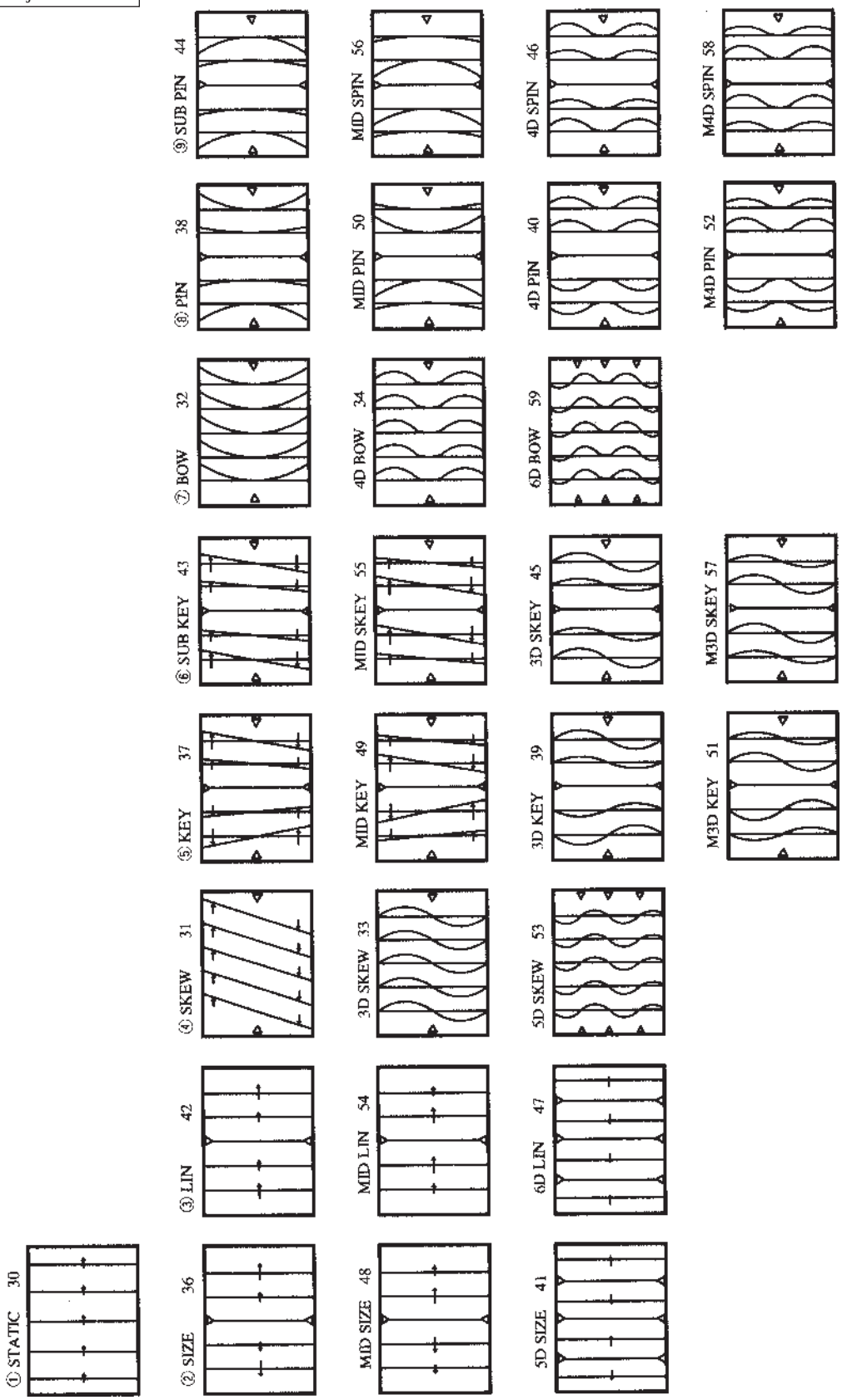
6.6.3.2 Dynamic convergence

In addition to the point convergence mode, conventional convergence adjustments can also be performed.

V • Convergence adjustment



H • Convergence adjustment



6.6.3.3 Main Deflection & Convergence Adjustment

■ How to Enter the Adjustment Mode

Adjust in the adjustment mode.

Press the both "ADJ IN" key on the remote control unit (RU-V107).

Main menu appear on the screen after enter the adjustment mode.

Select the number, you can adjust each adjustment mode as below.

Key No.	Adjustment Mode
3	Main deflection adjustment
4	Convergence adjustment
5	Point convergence adjustment

■ Adjustment the Main Deflection

The alphabetic characters displayed on the lower right of the screen indicate the type of main deflection adjustment.

To change the adjustment, press the numerical and alphabetical keys.

The display shows the set value under the main deflection adjustment type. To adjust the set value, use◄/– and +/► keys.

Key.No	Adjustment Type	Key.No	Adjustment Type
0	V. STATIC	7	H. BLK-L
2	V. SIZE	8	H. BLK-R
3	V. MID SIDE	9	V. MID LINEARITY
5	H. SIZE	B	H. PIN
6	V. LINEARITY	D	GH. LIN

■ Adjustment the convergence

- The alphabetic characters displayed on the lower right of the screen indicate the types of convergence. To change the convergence type,press the R ADJ, G ADJ and B ADJ keys of the remote control unit. The display shows the set value under the convergence type. To adjust the set value, use the ADJUST ◄/– and +/► keys.
- To display red, green and blue, use the remote control unit :
  - R ON/OFF key to ON/OFF.....Turn red color ON/OFF.
  - G ON/OFF key to ON/OFF.....Turn green color ON/OFF.
  - B ON/OFF key to ON/OFF.....Turn blue color ON/OFF.

  Example:

  To display only green color,press the R ON/OFF and B ON/OFF keys.
- Horizontal and Vertical Switching

  The following will switch cyclically.
  - R ADJ .....RH ◄► RV
  - G ADJ .....GH ◄► GV
  - B ADJ .....BH ◄► BV

Note: Convergence adjustment can be performed in the point convergence adjustment mode as well.

Key	Adjustment Item
1	☆ STATIC
2	☆ SIZE ← ↓ MID SIZE ↓ 5D SIZE —
3	☆LIN ← ↓ MID LIN ↓ 6D SIZE —
4	☆SKEW ← ↓ 3D SKEW ↓ 5D SKEW —
5	☆KEY ← ↓ MID KEY ↓ 3D KEY ↓ MID 3D KEY —
6	☆KEY ← ↓ MID SUB KEY ↓ 3D SUB KEY ↓ M3D SUB KEY —
7	☆BOW ← ↓ 4D BOW ↓ 6D BOW —
8	☆PIN ← ↓ MID PIN ↓ 4D PIN ↓ M4D PIN —
9	☆ SUB PIN ← ↓ MID SUB PIN ↓ 4D SUB PIN ↓ M4D SUB PIN —

☆ : Initial menu when selecting with 1~9 key.

6.6.4 WHITE BALANCE ADJUSTMENT MODE

6.6.4.1 Before Adjusting white Balance

• Entering the adjustment mode

This adjustment is executed in adjustment mode. First, press the both (ADJ IN) key of the remote control to enter adjustment mode. The main menu is displayed when adjustment mode is entered. When at this time the 6 key is pressed, white balance adjustment mode will be entered.

• White balance adjustment mode

The letters displayed at the right bottom of the screen indicate the white balance adjustment item types. Selection is possible by pressing from the 0 key to the Î key. Further, numbers are displayed under the items, but these are set values, and adjustment is made with the ◁/- key and the +/▷ key.

Key No.	Adustment Type	Key No.	Adustment Type
0	ABL GAIN	7	RED HIGH-LIGHT
1	CONTRAST	8	GREEN HIGH-LIGHT
2	BRIGHTNESS	9	BLUE HIGH-LIGHT
3	COLOR	A	RED LOW-LIGHT
4	TINT	B	GREEN LOW-LIGHT
5	SHARPNESS	C	BLUE LOW-LIGHT
6	LINEAR WHITE	D	ABL LEVEL

■ White Balance Adjustment

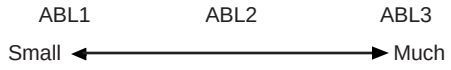
Adjusting the white balance means to adjust the color tone. This adjustment is necessary for the screen to become white when the white signal is input, and black when the black signal is input. In the actual adjustment, the bias and gain of the CRTs for the three colors (R, G, and B) are adjusted so that the screen becomes the same color tone. Before performing the white balance adjustment, complete the convergence adjustment first. If not performed properly especially where the screens join each other, the colors of the screens may not join. When performing the adjustment, take into account the position and height of the sets, height of the eyes of those viewing the screens, and distance to the screens. There are two types of screen white balance data-video, Y/C input and RGB input. The data is switched when the screens are switched. For RGB input, COLOR, TINT, and SHARPNESS cannot be adjusted. When the ABL is OFF, ABL LEVEL cannot be adjusted.

NOTE * : In the PAL signal ,TINT cannot be adjusted even in the video or Y/C input .

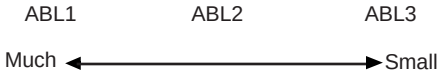
■ ABL switch Setting

In ABL setting, when the luminance of units completely match the unit which ABL voltage is controlled the most and luminance is lowest, the luminance of the whole multi-screen becomes low.
The ABL switch is able to switch the amount of ABL control voltage when ABL is on.
This switch has three modes-ABL1, ABL2, and ABL3.

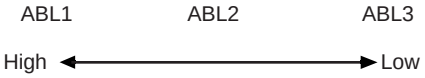
Amount of voltage of other units adjusted to the unit whose ABL voltage is controlled the most



Luminance inconsistency on multi-screen



Luminance of whole multi-screen



Recommended Usage of Modes

ABL1 — When importance is placed on luminance level of whole multi-screen rather than consistency of luminance of multi-screen (Outdoor, large amount of multi-screens, etc.)

ABL2

ABL3 — When importance is placed on consistency of luminance of multi-screen rather than luminance level of whole multi-screen (No gap, small amount of multi-screens, etc.)

At shipment, the ABL switch will be set to ABL3.

■ Adjustment Flow

Single screen

[1] Perform the adjustment using the full white (variable by %) signal generator.
[2] Perform the COLOR, TINT, and SHARPNESS adjustments.
[3] Note down or memorize in the PC memory the data after the rough adjustment.
[4] Check the joining of the screens using the animated images.
[5] If the screens are not joined properly, adjust. (Check with animated images.)
[6] If not joined properly, return to the data in (2) and perform the adjustment again.

■ Initial Settings

CONTRAST	128
BRIGHTNESS	128
ABL GAIN	MAX (255)
ABL LEVEL	128
LINEAR WHITE	MAX (255)

R,G,B,HIGH LIGHT
R,G,B,LOW LIGHT
* SHARPNESS
* TINT
* COLOR

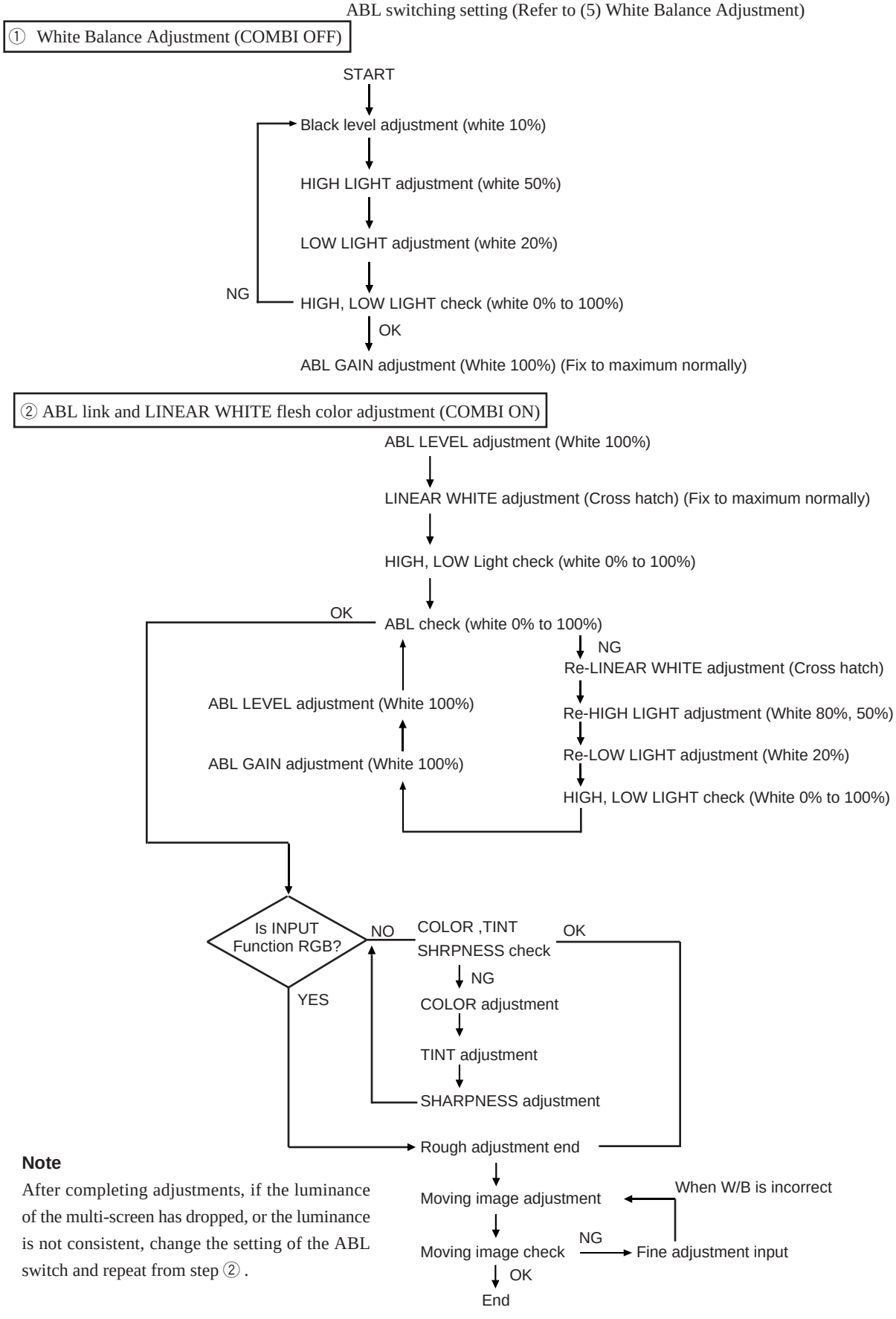
Data at shipment

*Must be set only for VIDEO and Y/C input.
TINT adjustment cannot be performed for PAL inputs

- CONTRAST, LINEAR WHITE, ABL LEVEL, ABL GAIN adjustment values considerably affect the ABL operation.
  Fix the initial value for ordinary use.
- Perform the W/B adjustment in the order of R/G/B HIGH LIGHT and R/G/B LOW LIGHT. (Fix the CONTRAST and BRIGHTNESS.)
  Change the HIGH LIGHT luminance using G HIGH LIGHT and the LOW LIGHT luminance using G LOW LIGHT.
- Basically, fix the CONTRAST level to 170, if the ABL function feature well.

6.6.4.2 White Balance Adjustment Flowchart

❑ When adjusting the multiprojection unit Initial setting Multi on
ABL switching setting (Refer to (5) White Balance Adjustment)



Note

After completing adjustments, if the luminance of the multi-screen has dropped, or the luminance is not consistent, change the setting of the ABL switch and repeat from step ② .

■ White Balance Adjustments

(1) Black level adjustment Signal:White 10%

Adjust R LOW, G LOW, and B LOW to the point where the CRT starts lighting up.

(2) HI LIGHT adjustment Signal:White 50%

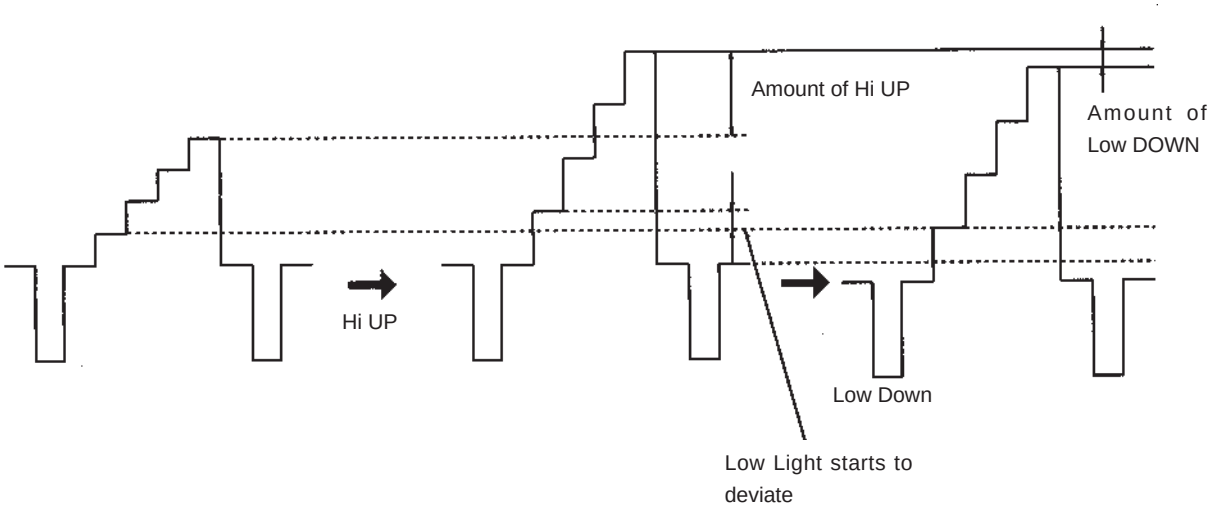
Adjust R HI, G HI, and B HI so that the CRT becomes white. First, adjust so that the brightness of R, G, and B becomes the same, and while maintaining that brightness, balance R, G, and B, and adjust so that the CRT becomes white.

(3) LOW LIGHT adjustment Signal:White 20%

Adjust R LOW, G LOW, and B LOW so that the CRT becomes gray.

(4) Convergence adjustment Signal:White 50%, 20%

Repeat (2) to (3) and converge the light. If the HI LIGHT of R, G, and B is moved, their LOW LIGHT will change greatly. Therefore, pay special attention to the value of the LOW LIGHT.

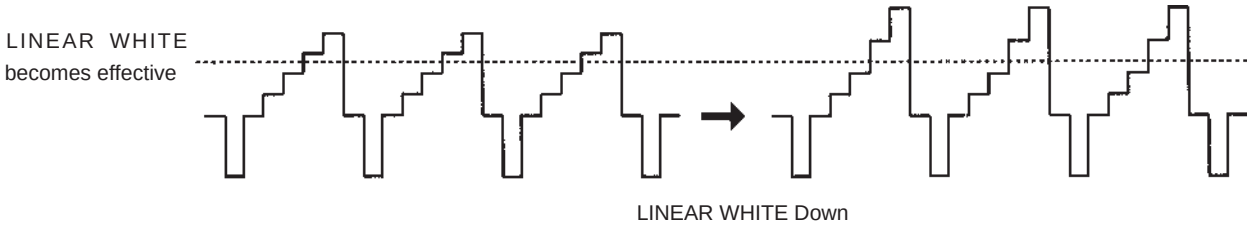


■ LINEAR WHITE adjustment

When white peak signals such as WINDOW are input, due to the characteristics of the Blue CRT, there is a tendency for the peak to become yellow compared to other colors. The linear white adjustment is performed to correct this tendency.

Blue becomes weak when data is set to UP and strong when set to DOWN. If Linear White is added excessively, the ABL voltage becomes unbalanced and the medium luminance of blue may be erased, etc.

Also make sure that the blue is not blur when MULTI ON is set because the top left and bottom left of the screen are affected first.



■ ABL GAIN adjustment (White 100%)

The ABL GAIN adjustment adjusts the white 100% luminance of a unit to other units after low luminance and medium luminance have been adjusted.

Normally, when white 100% is input, ABL is imposed and the current is controlled so that the current flowing in the CRT does not exceed a certain level. Even if the current flowing in the CRT of each unit is the same, the difference in the characteristics of each CRT will cause their luminance to become inconsistent. The ABL GAIN adjustment converges this inconsistency. It adjusts the ABL current flowing virtually.

In white 100% inputs, as the ABL works efficiently, the luminance drops, when the ABL GAIN of a unit with high luminance is decreased, use this adjustment to adjust its luminance to the other units. Turn off the ABL in the adjustment.

Normally set the ABL GAIN to maximum.

■ White Balance adjustment values

Because the white balance is adjusted using high light (drive) and low light (cutoff), the red, green, and blue may not be balanced at the mid-range of luminance. In this case, adjust R, G, B, LOW LIGHT or R, G, B, HIGH LIGHT at the mid-range, and make the balance of these colors consistent from low luminance to high luminance.

Reference Values

Measuring equipments

• Video SG: MG6301B (Anritsu Denki)

• Color analyzer: CA-100 (Minolta)

① White balance

(Video SG: Window step signal, signal level; –3 dB)

Color Mode 1

	Lo	Hi
x	283	310
y	283	290
Y (Cd/m^2)	1.2	41

Color Mode 2

	Lo	Hi
x	360	376
y	360	386
Y	1.2	41

② Color (Video SG: Window chroma signal, signal level: 0 dB)

Color Mode 1

x	419
y	346

Color Mode 2

x	490
y	387

■ ABL LEVEL adjustment (White 100%)

The ABL LEVEL adjustment controls the inconsistency of the ABL control voltage of each unit when ABL is on.

[1] Set the ABL of all units to ON.

[2] Set the ABL LEVEL adjustment value of all units to 128.

[3] Check the displayed ABL voltage value of all units.
(Selecting ABL LEVEL displays the ABL voltage.)

[4] Select the unit with the highest voltage from amongst the volt ages displayed, and decrease the ABL LEVEL to the voltage value of the unit with the lowest value.

[5] If [4] is possible, take the voltage value of the unit with the low est value as the ABL voltage of the system, and adjust in the same way for other units.
If [4] is not possible, take the voltage when the ABL LEVEL of the unit with the highest voltage in (3) as the ABL voltage of the system. Perform the ABL LEVEL adjustment for other units according to this voltage.

[6] Turn ON/OFF COMBI (whole system and each unit), and check if the changes from white 0% to 100% are natural.

6.6.4.3 Precautions on White Balance Adjustment

■ Adjustment Using Moving Images

The adjustment using images adjusts the overall joining of the screens by loading discs used by users (for actual performance) and discs always used for adjustments. View the overall screen and adjust the screen with the greatest difference to the other screens. The specific method is;at first, focus on the brightness, make the brightness the same, and correct the differences in R, G, and B. Pay the attention that changing the HI LIGHT value affects the balance of the LOW LIGHT considerably. Strictly speaking, as W/B deviation cannot be checked using moving images and W/B cannot be corrected just by performing fine adjustments, check using rough adjustments.

If the DEMONSTRATION-II LD can be used, correct the following points.

(a) Dark images (Almost black image:FRAME No. 32300 to 33200)
Check that the brightness of the screens appears the same.
Check that black is not blur or emphasized.

(b) Bright images (Almost white image:FRAME NO. 7400 to 8100)
Focus on where the brightness is the same, especially the white peak, and check in the same way as for dark images in (1).

(c) Skin color images (FRAME NO. 26900)
Check if the skin color of a face image is the same as in the other screens.

(d) Colored images (FRAME NO.19100)
Use when performing adjustments during VIDEO input or Y/C input.
Adjust so that the colors of vegetables, fruits, etc. are of the same brightness and same depth.

If consistency cannot be adjusted with animated images, re-input the rough adjustment data and re-adjust.

* View the moving images. If a screen is darker than the others due to excessive ABL, increase the contrast and decrease the R, G, B High Light so that ABL is suppressed.

(e) White peak images (FRAME NO.08272)
Readjust the Linear White adjustment, if the whiteness on the white peak screen differed on each screen.

■ Confirm the moving images

View the moving images. If W/B is incorrect, set to rough adjustment. If the luminance of the multi-screen is dark or inconsistent, set the ABL switch.

■ Precautions

■ Avoid adjusting with images with high tube radiation (FRAME NO. 13590)

If only one spot is bright in a very dark image, the screen will look bright due to the spot.

■ Precautions on screen hue

If the hue of the screens is green or yellow, images will not be displayed clearly. The white parts of bright images especially will appear yellow. These images can be made clear by adjusting so that they appear slightly bluish.
However, if made bluish excessively, brightness may appear insufficient due to the CRT characteristics.

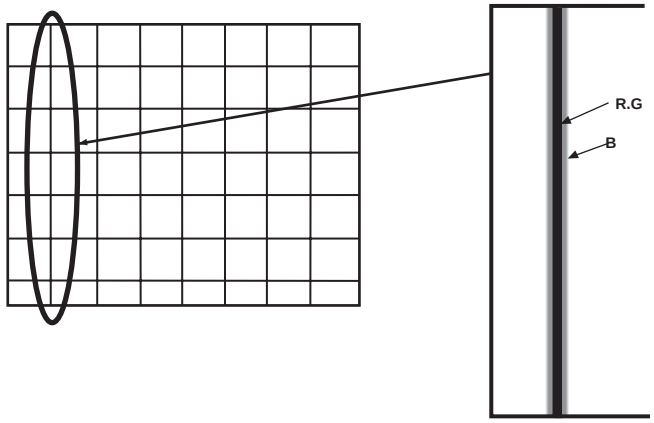
■ Color Adjustment (White Balance)

(a)Effects of brightness
- Take note of dark images which have some high luminance parts.
- The reflected light overlap with surrounding dark parts at the face of the CRT and surface of projection lens, and luminance and hue become different from the adjoining screen.

(b)Differences caused by visual points
- Although the joined parts of multiple screens are improved by peripheral light amount correction, the image may not be natural at some points. (Adjustment of vertical direction using the installation table)
- Due to the layout of the red, green, and blue CRTs, when the screens are viewed diagonally, they may appear reddish or bluish (Color shift).
- For multiple screens, as the angles of the left and right screens are different to a viewer, they may appear to have different colors. Before adjustments, check the user's visual point, and adjust at that point.

6.6.5 Adjust the focus VR

In some cases, the left side of the screen may become greenish.
This can be corrected by adjusting the B focus of the focus VR slightly deviated from the just focus position.



Adjusting Method

Adjust the B focus VR so that B is at the just focus position on the screen.
While observing the left side of the screen, rotate the B focus VR in the clockwise direction (about 10 degree), and adjust so that B is 1.2 to 1.5 times the other colors from the just focus point.

After adjusting, adjust the convergence and white balance again.

7. GENERAL INFORMATION

7.1 IC

● **List of IC**

PD5461A, HD14174BP, UPC78L05J, PD5136, M66311P, 25LC160

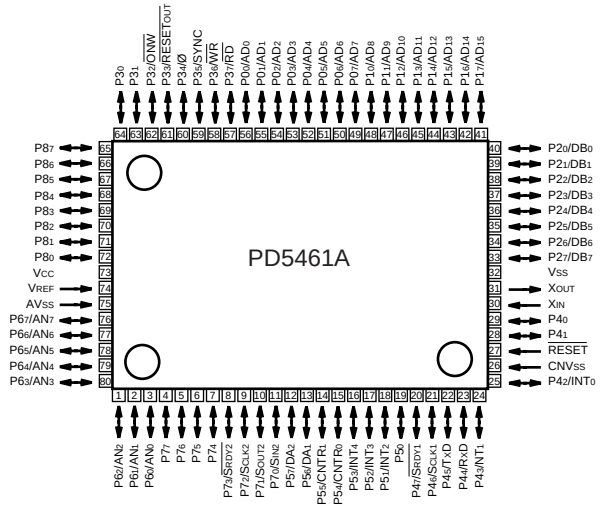
● The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ PD5461 (M38067EX)

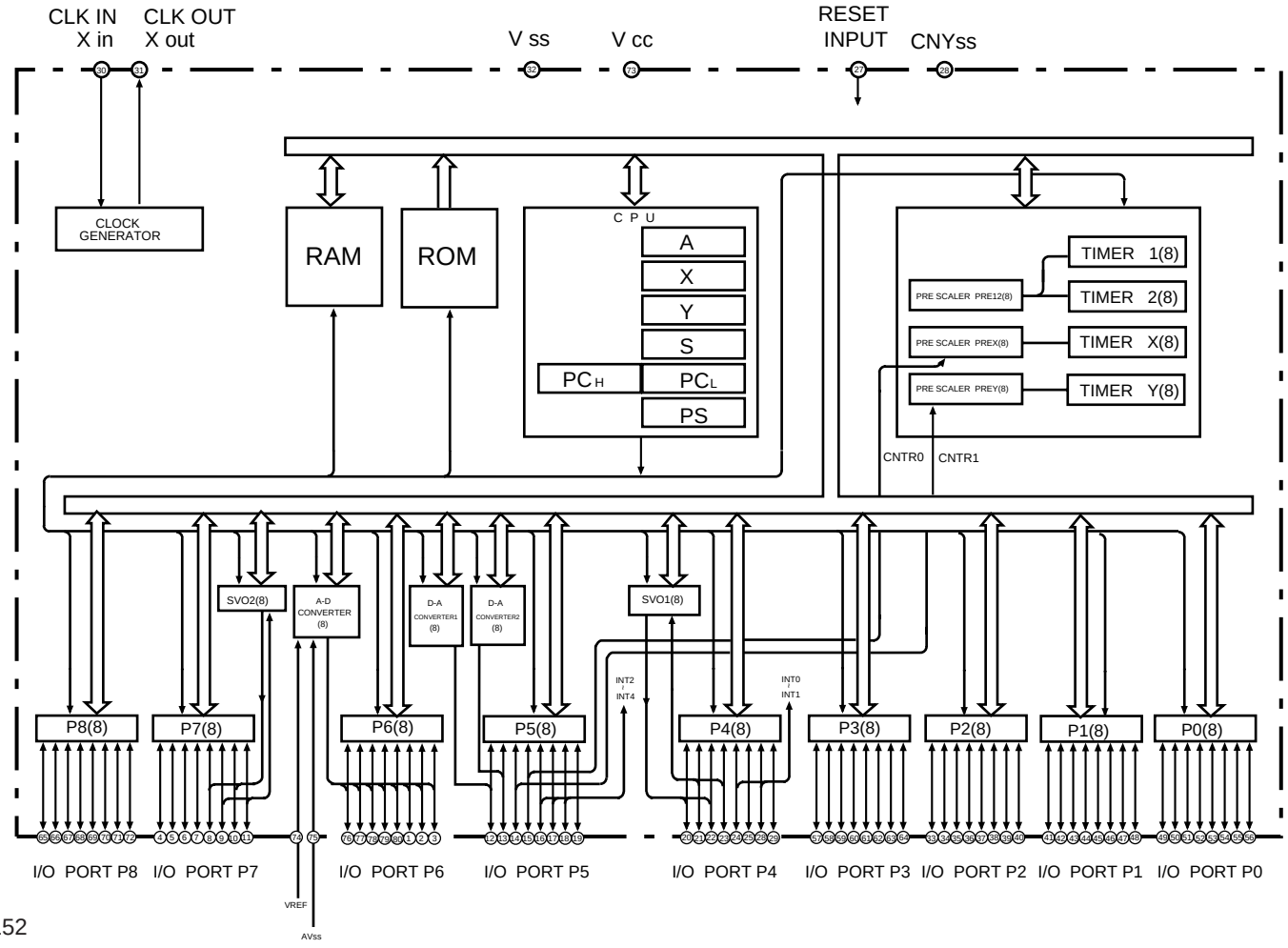
(CONTROL ASSY(1/2): IC1001)

Single chip 8 bit microprocessor (System control), CMOS IC

● **Pin Assignment**



● **Block Diagram**



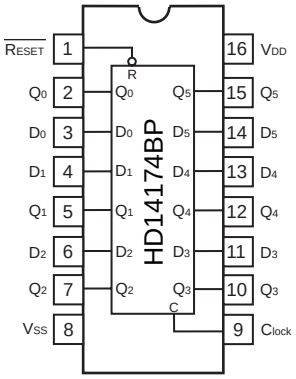
● Pin Function

Pin No.	Name	Initial Value	Purpose ( ):Logic
1	NC	H	Not used
2	NC	H	Not used
3	EXP LEB	L	Output expansion IC control output(positive)
4	NC	H	Not used
5	NC	H	Not used
6	NC	H	Not used
7	NC	H	Not used
8	COMM ENB `	L	RS232C throughout control output(positive)
9	S CLK	H	SPI clock output
10	S OUT	H	SPI data output
11	S IN	H	SPI data input
12	ABL LEVEL	L	ABL LEVEL control voltage output (D/A output)
13	ABL GAIN	H	ABL GAIN control signal output
14	NC	H	Not used
15	NC	H	Not used
16	NC	H	Not used
17	NC	H	Not used
18	V BLK	H	V blanking signal input
19	NC	H	Not used
20	POWER	H	Power supply ON/OFF control signal output(negative)
21	NC	H	Not used
22	TXD	H	RS232C data output
23	RXD	L	RS232C data input
24	REM IN	H	Remote control signal input
25	KEY IN	H	Rear panel key signal input
26	CNVss	H	Not used
27	RESET	L	System reset input
28	NC	H	Not used
29	NC	H	Not used
30	X IN	-	scillation terminal for system clock generation
31	X OUT	-	Connects a 9.8304 MHz ceramic oscillator
32	Vss	-	GND
33	NC	H	Not used
34	NC	H	Not used
35	NC	H	Not used
36	NC	H	Not used
37	Y/C	H	Input switching control output(positive)
38	NC	H	Not used
39	NC	H	Not used
40	NTSC/PAL	L	Input switching control output(positive)
41	RGB	H	Input switching control output(positive)
42	ROM CEB	L	EEPROM IC control output(negative)
43	DAC CEB	H	DAC IC control output(negative)
44	OSD BUSY	L	OSD BUSY signal input(positive)
45	OSD CEB	H	OSD IC control output(negative)
46	CONV PD	L	Convergence power down detection input(positive)
47	C CE2	L	Convergence IC control output(negative)
48	C CE1	L	Convergence IC control output(negative)
49	C MUTE	L	Convergence IC MUTE ON/OFF control output(negative)
50	CONV SEL	H	Convergence serial control line output (negative)
51	NC	H	Not used
52	NC	H	Not used
53	NC	H	Not used
54	NC	H	Not used
55	V SMP	H	Auto white balance S/H signal input(negative)
56	COL OFF	L	COLOR ON/OFF control output(positive)
57	R OFF	L	RED CRT ON/OFF control output(positive)
58	G OFF	L	GREEN CRT ON/OFF control output(positive)
59	B OFF	L	BLUE CRT ON/OFF control output(positive)
60	50/60	L	Input signal determination input(negative)
61	MULTI	L	Peripheral light amount correction control output(positive)
62	V MUTE	H	Sample pulse masking control output(negative)
63	NC	H	Not used
64	NC	H	Not used
65	NC	H	Not used
66	NC	H	Not used
67	NC	H	Not used
68	NC	H	Not used
69	NC	H	Not used
70	NC	H	Not used
71	NC	H	Not used
72	NC	H	Not used
73	Vcc	-	+5V
74	Vref	-	+5V
75	AVss	-	GND
76	P.IN.I	H	Internal power supply voltage monitoring input, number of discharges detection input
77	AUTO ABL LEBEL	-	AUTO ABL LEVEL control input(positive)
78	O.IN.O	H	Not used
79	ABL COMBI	L	ABL operations control output(positive)
80	NC	H	Not used

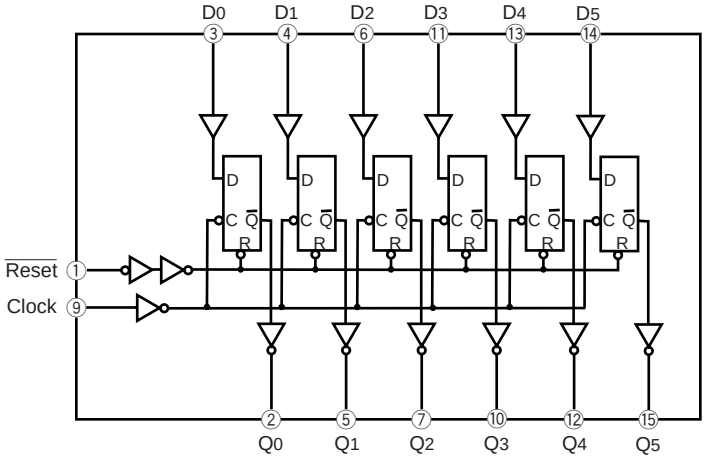
■ HD 14174BP (VIDEO ASSY(3/3): IC2503)

HEX D-type Flip Flop

● Pin Assignment



● Block Diagram

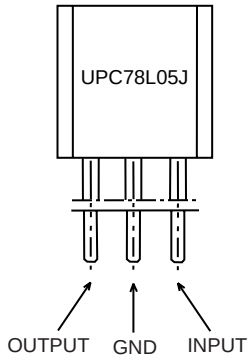


■ UPC78L05J

(CONV.AMP ASSY(2/2): IC4705)

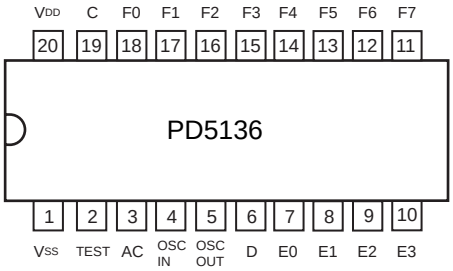
Regulator

● Pin Assignment



■ PD5136 (M50560-XXXP)
(REAR LED ASSY: IC4901)
Remote Control Transmitter

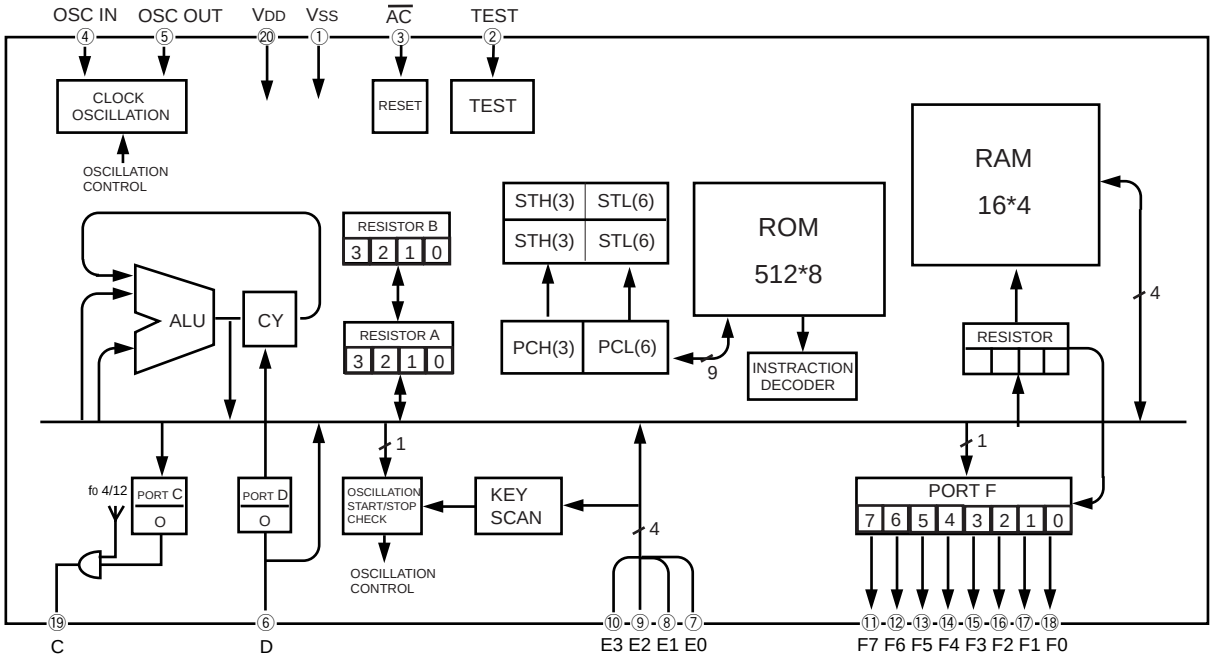
● Pin Assignment



● Pin Function

PIN No.	PIN Name	Name	I/O	Function
1	Vss	GND	-	GMD
20	V_{DD}	Power supply	-	+Power supply
2	TEST	TEST	In	Normally short-circuited to Vss
3	$\overline{AC}$	Reset	In	Resets when set to "L"
4	OSC IN	Osc input	In	Oscillated by the ceramic oscillator
5	OSC OUT	Osc circuit	Out	Oscillated by the ceramic oscillator
19	C	Port C	Out	Transmission output (CMOS output)
6	D	Port D	In/Out	1-bit input/output (Nch open drain output)
7-10	E0-E3	Port E	In	4-bit input (Built-in pull-up resistor, key input)
18-11	F0-F7	Port F	Out	8-bit output (Nch open drain output key scan output)

● Block Diagram

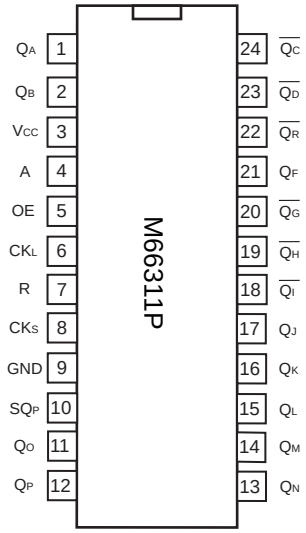


■ M66311P

(REAR LED ASSY: IC4902)

LED Array Drive

● **Pin Assignment**



● **Pin Function**

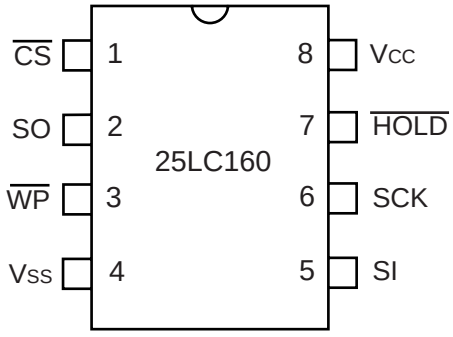
Q_A-Q_P	:Parallel data output
SQ_P	:Series data output
Vcc	:Power supply
CKL	:Latch clock input
$\overline{R}$	:Reset input
CKs	:Shift clock input
A	:Series data input
$\overline{OE}$	:Output enable input

■ 25LC160

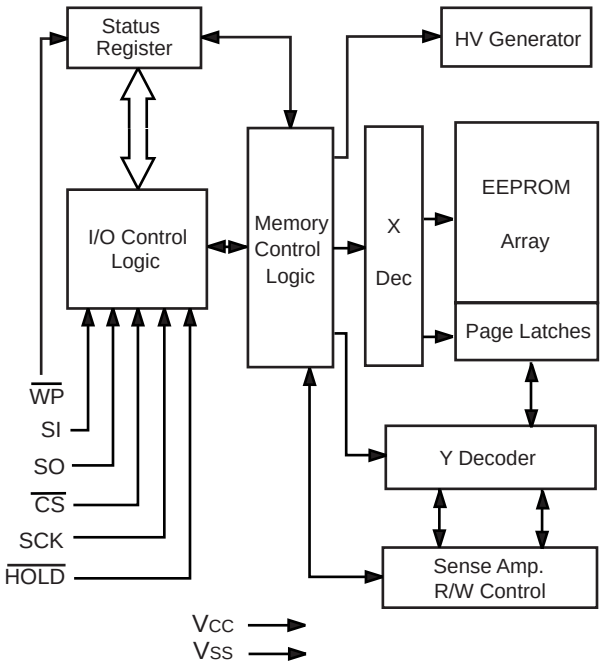
(CONTROL ASSY(1/2): IC1002)

16k 2.5V SPI Bus Serial EEPROM

● **Pin Assignment**



● **Block Diagram**



7.2. DIAGNOSIS

7.2.1 DISASSEMBLY

1.CRT SERVICE ASSY

1. Remove the back cover (UPPER) and back cover (UNDER). (Fig. 1.)
2. Remove the deflection york, CRT drive assy, and ground wire connected to the CRT. (Fig. 2)
   Remove the screws of the ground wires from the power supply and deflection york, and disconnect the ground wires from the CRT frame.
3. Disconnect the anode cable, and the styling pass lock attached to the cable, clamper, etc.
4. Remove the screws securing the CRT frame of the CRT service assy and CRT holder of the cabinet (six screws altogether). (Fig. 4)
5. Lift up the CRT service assy with the whole CRT frame slightly, and slide the CRT service assy horizontally towards the front to remove.

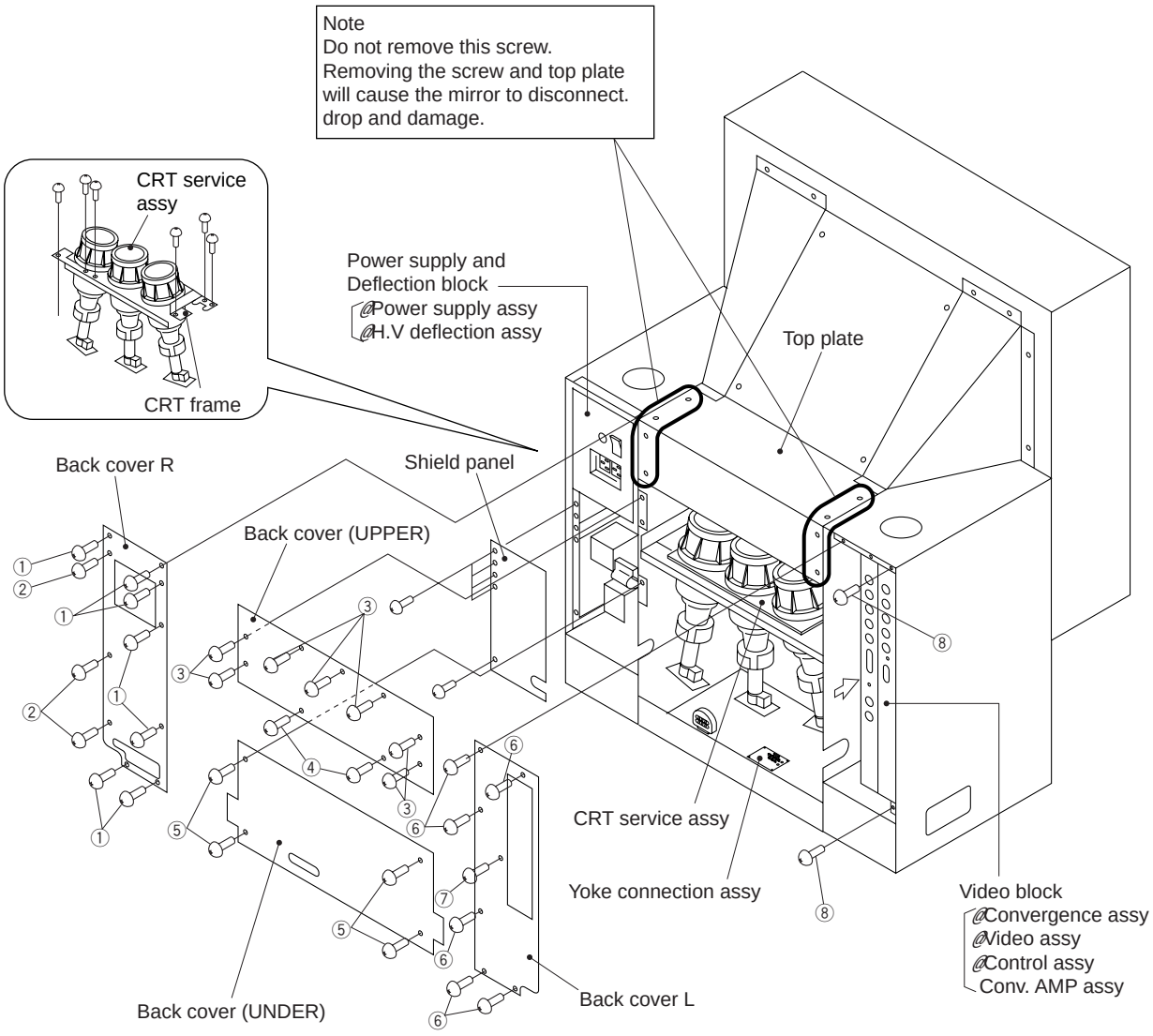


Fig. 1 Removal of each part

2. REMOVING THE POWER SUPPLY AND H.V/DEFLECTION BLOCK (POWER SUPPLY ASSY, HIGH VOLTAGE DEFLECTION Assy)

1. Remove the back cover (UPPER), back cover (UNDER), rear cover R and shield panel. (Fig. 1)
2. Disconnect the anode cable. (Fig. 3)
3. Disconnect the focus cable from the focus volume (VR1), and remove the screw of the ground wire attached to the CRT frame (Fig. 2)
4. Pull the power supply and H.V/Deflection block slightly to the front, and unhook the special screws attached to the side board of the chassis and cabinet. (Fig. 3 and Fig. 4)
5. Disconnect all cables attached to the board.
6. Remove the power supply and deflection block.

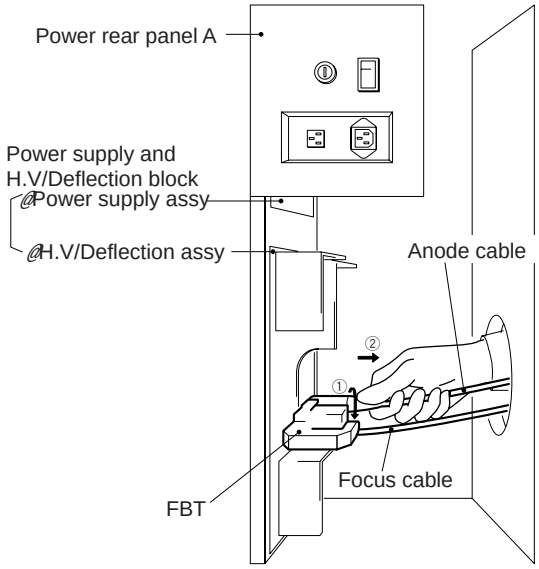


Fig. 3

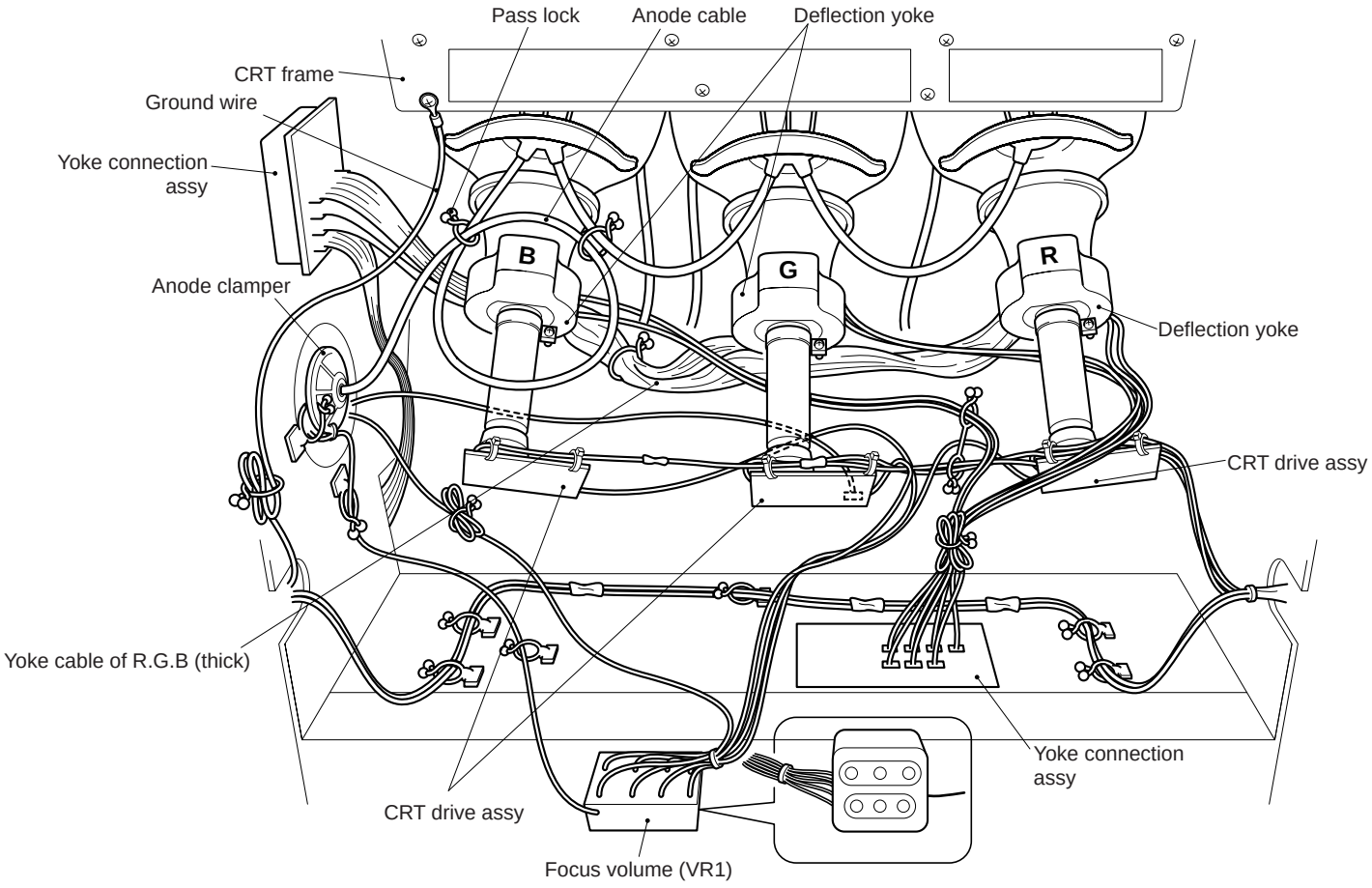


Fig. 2 Styling

3. Removing the Video Block

(Convergence Assy, Video Assy, Control Assy, Conv. Amplifier Assy)

1. Remove the back cover (UPPER), back cover (UNDER), and back cover R. (Fig. 1)
2. Remove the screws securing the video block.
3. Disconnect the connector connected to the video block until the video block can be pulled out.(Do not disconnect the wires from the fan.)
4. Slide out the video block horizontally to the front to remove.

4. Removing the York Connection Assy

1. Remove the connector connected to the york relay assy.
2. Push the york connection assy in the arrow direction. (Fig. 4)

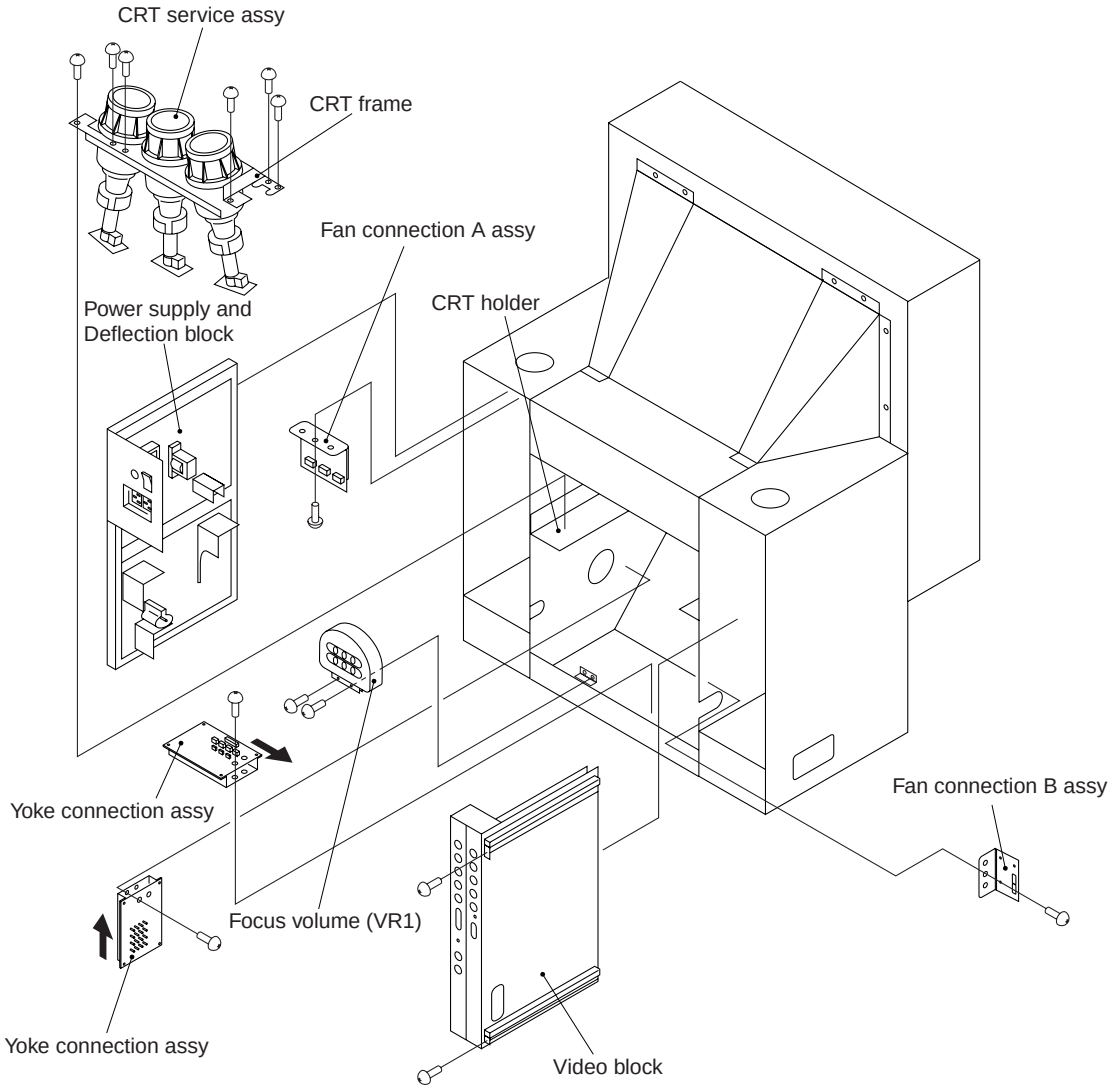


Fig. 4

5. REMOVING THE MIRROR

Removing the Mirror and Precautions

The mirror of this unit is supported by the mirror holder L, R, and C inside the cabinet assy.

Removal of only these mirror holder (UNDER) will cause the mirror to drop and damage. Therefore, before doing so, remove the mirror first using the procedure below. (Do not remove the screws of the top board of the cabinet engine.) (Refer to Fig. 1)

1. Remove the screen.
2. Remove the mirror holder L and R at the top left and right sides of the mirror.
   (Do not remove the center mirror holder C.)
   Remove the fixing screws of the mirror holder L and R, push the stays upwards along the groove of the cabinet assy (in arrow direction ①), and remove them towards the front (in arrow direction ②).
3. Lift up the mirror (in arrow direction ③) to disconnect the bottom, and pull it out in the arrow direction ④.

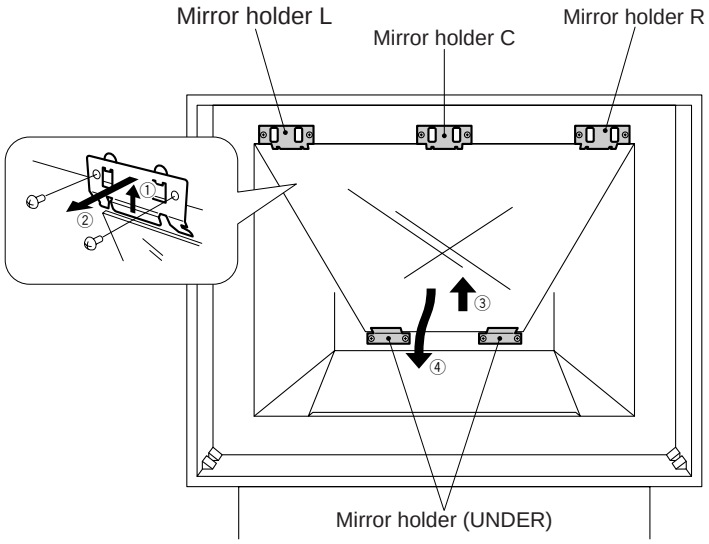
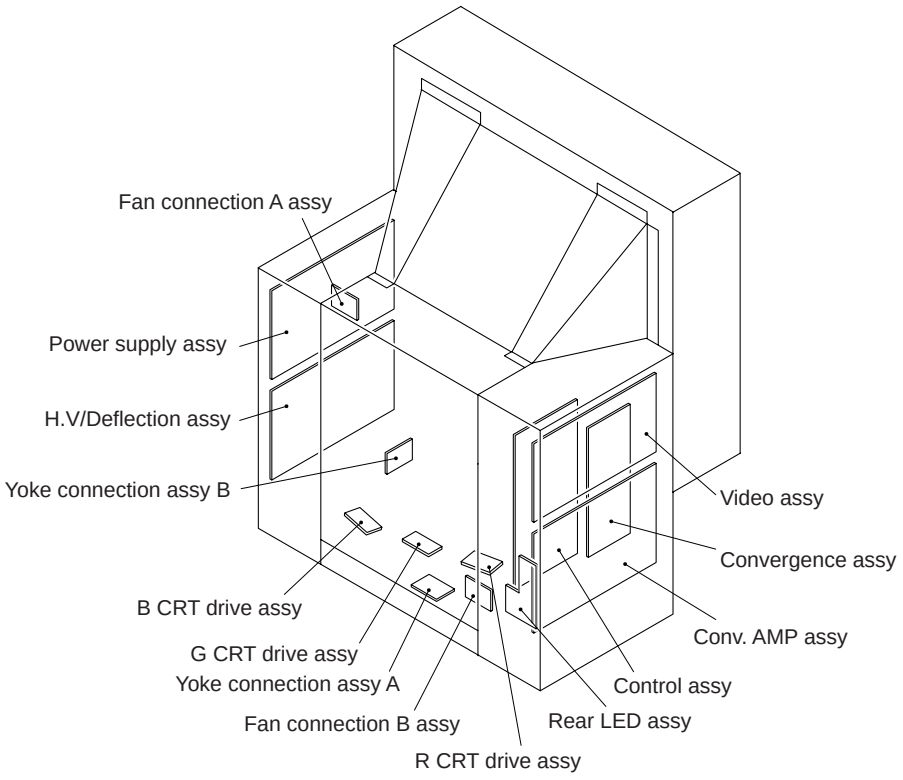


Fig. 5 Removal of mirror

7.2.2 PCB LOCATIONS



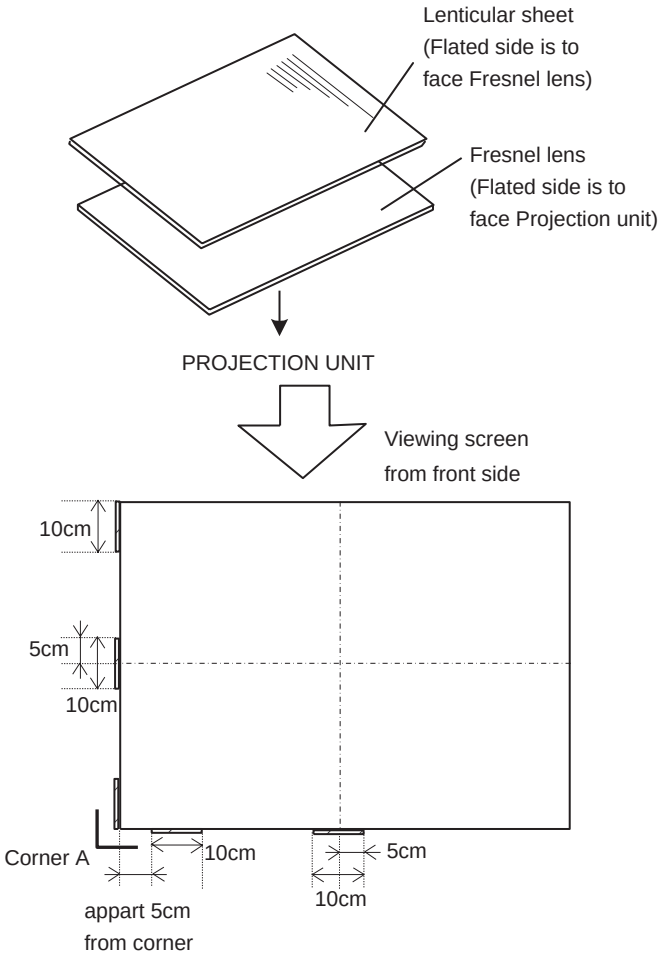
7.2.3 ASSEMBLING OF SCREEN

Required tools :

1) Double coated adhesive NITTOH co.HJ-0240 W 5mm, T 0.4mm (Use to atach screen on to frame)
2) Plastic adhesive tape (Black)
3) Mixed liquid of Ethanol: Pure water (mix ratio Ethanol:pure water =3:1)
4) Double coated adhesive, SONY co.T4000 W 5mm, T 0.1mm (Use to atach PC panel)

STEP 1) Bring together Fresnel lens (50) and Lenticular sheet (50C) and paste adhesive tape (HJ-0240) on to left and bottom side.

- Bring the flated face of lenticular sheet (50C) to lens face (unflated face) of flesnel lens.

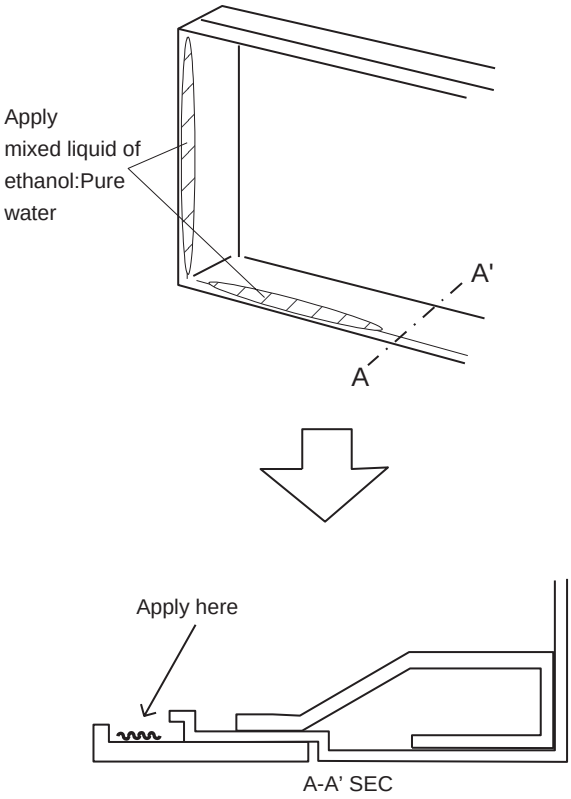


- Bring together lenticular sheet and fresnellens adjusting the corner A to match each other and paste 5pcs,10cm long double coated adhesive tape(HJ-0240) on to edge of it. Make sure the tapes are pasted well on to edge of the screen.

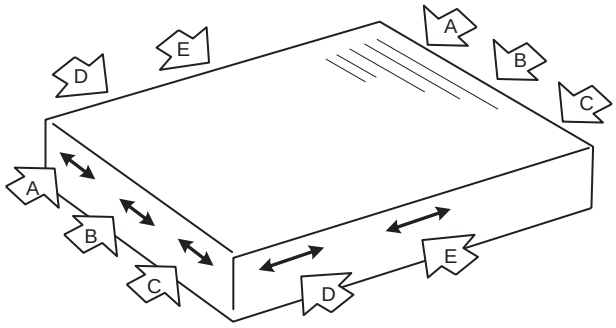
STEP 2) Apply mixed liquid of Ethanol:Pure water (3:1) on to the screen frame ASSY where screen will be placed.

- Apply mixed liquid of Ethanol:pure water on to groove of screen frame where screen will be placed.

Note: Apply liquid just before placing the screen assy. (Mixed liquid,ratio of 3:1 will take a minute todry out.Therefore assemble the screen within 1 minute after applying the liquid)



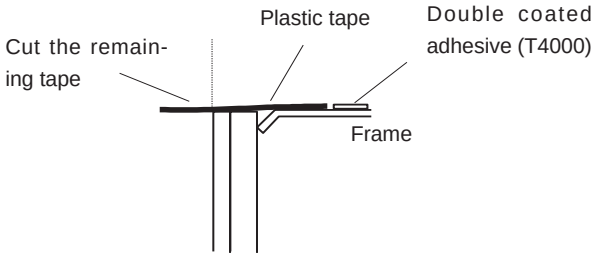
STEP 3) Place screen (lenticular sheet &Fresnel lens) on to Screen frame assy and fit it in to groove on the left and bottom side of screen frame assy.
Push the frame from both side so that screen will well be joined with the frame by adhesive.



Push from both side,
A to A,B to B,etc at the same time.

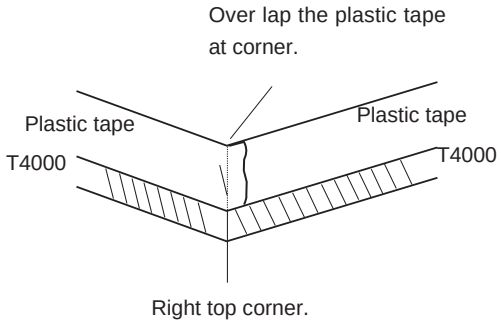
STEP 4) Paste Black plastic tape along the top and right edge of the screen and then paste double coated adhesive tape (T4000) along the plastic tape.

• Notice on pasting plastic tape.
1) Paste plastic tape slightly protruding out on the edge of screen and then cut the protruding part.(Be careful not to scratch the screen)
2) Remaining tape should be folded towards surface of the screen. (folded tape width should be less than 1mm)
3) To avoid light leakage from the corner, over lap the plastic tape at the corner Plastic tape.



Screen cross sectional view

• Paste Double coated adhesive tape (T4000) along plastic tape. (Be careful not to over lap the plastic tape)



STEP 5) Paste PC panel H &V on to double coated adhesive tape (T4000) and fix them with screws.

7.2.4 REPLACING THE CRT ASSY

Serviceman Warning
When replacing the CRT assy,turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

The anode cables of the CRT assy R,G and B in MULTIPROJECTION UNIT are connected in series as shown in Fig. 1.

When replacing the CRT assy,the anode cable have to be cut.

Table 1 Cable disconnecting methods

Note:

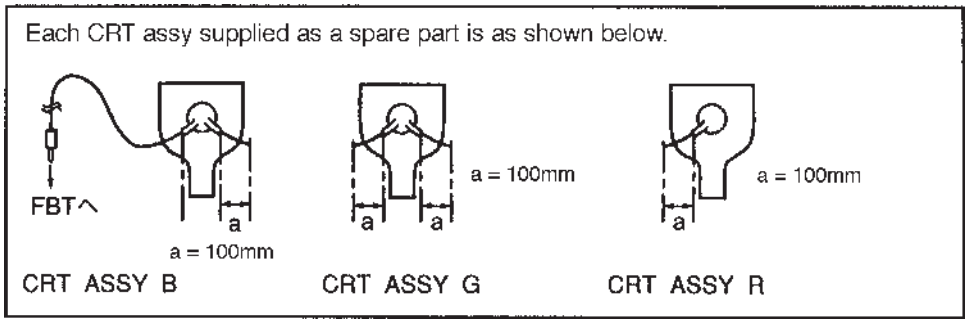
Since the anode cables for the CRT assy to service supplies are only available in half lengths,either cut longer lengths, or join older lengths of cable to ensure that the original cable length is used.

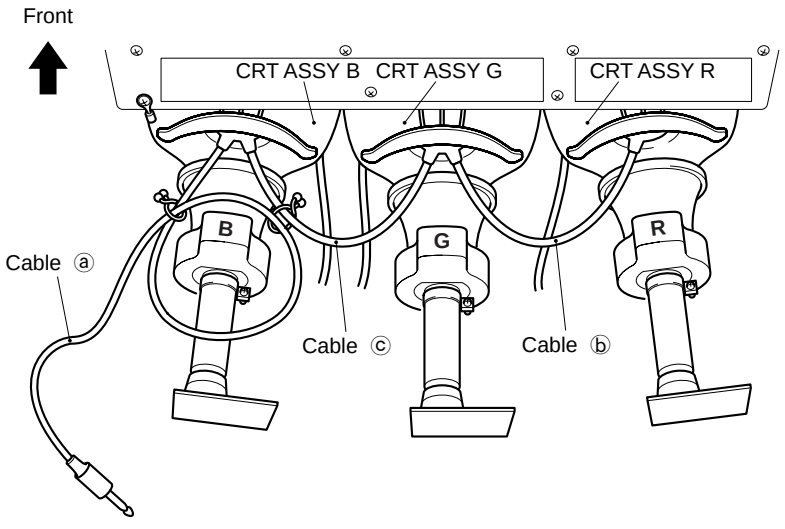
Cable	Replacement CRT assy		
	When CRT assy B is replaced	**When CRT assy G is replaced**	**When CRT assy R is replaced**
Cable ⓐ	Disconnect the anode cable from the FBT. (Refer to "6.3.3 ANODE VOLTAGE MEASURING METHOD")	—	—
Cable ⓑ	Leave it as is.	Cut a place 20mm from the exact center towards the CRT assy G.	Cut a place 20mm from the exact center towards the CRT assy R.
Cable ⓒ	Cut a place 20mm from the exact center towards the CRT assy B.	Cut a place 20mm from the exact center towards the CRT assy G.	Leave it as is.

Note: Do not cut other cables by mistake.

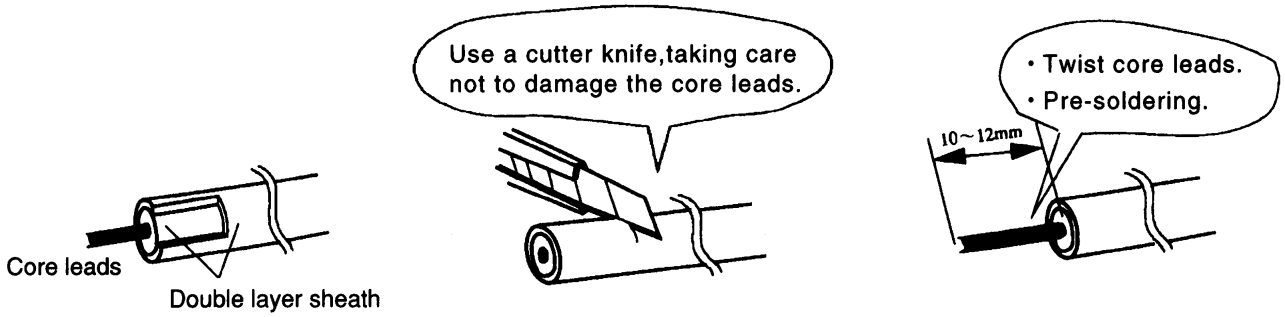
1. WHEN REPLACING THE CRT ASSY

Unplug the AC plug and let the unit discharge for more than 1 minute,then cut the anode cable according to Table 1.





■ ANODE CABLE STRUCTURE AND SHEATH PEELING

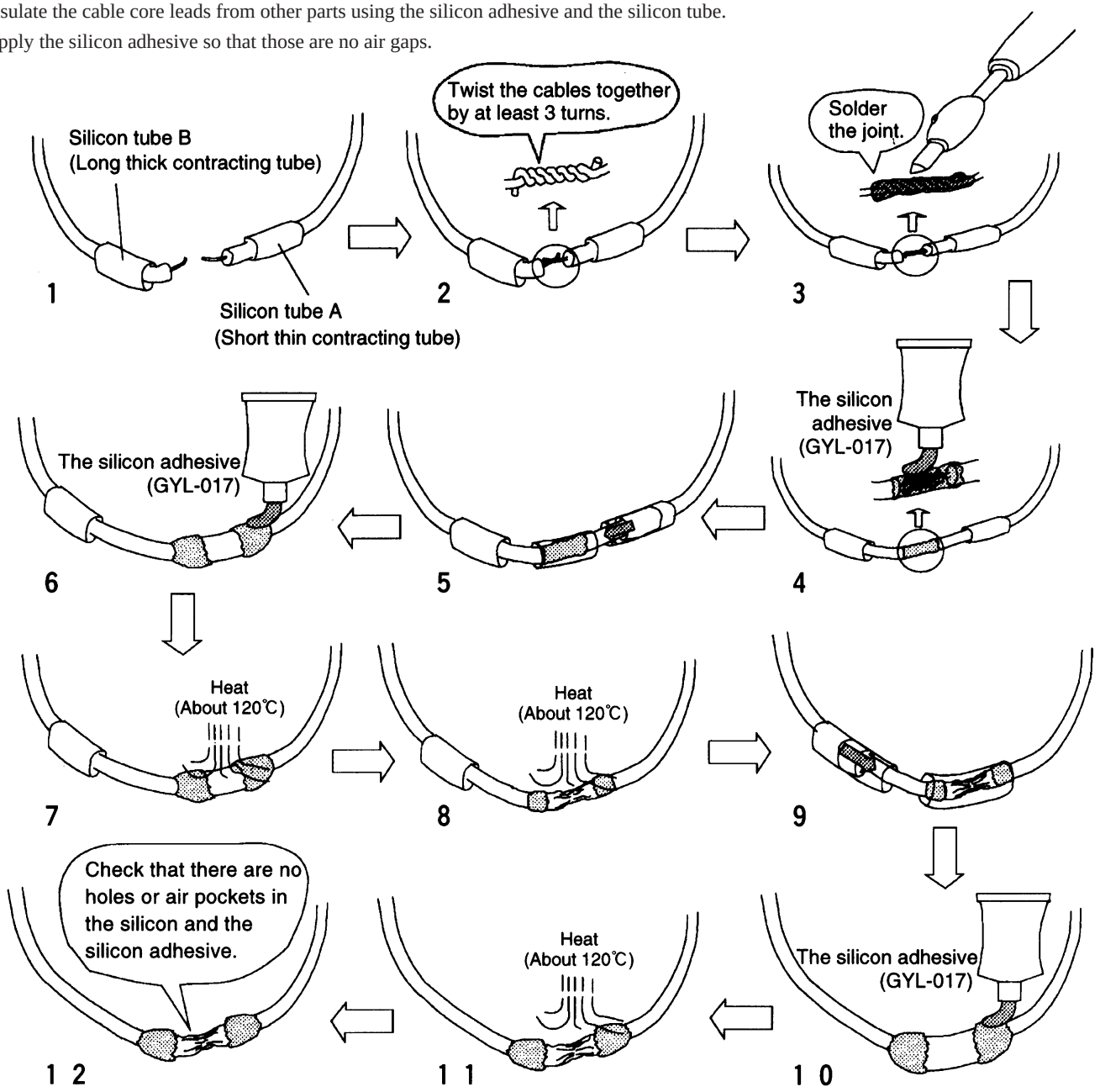


■ ANODE CABLE JOINING PROCEDURE

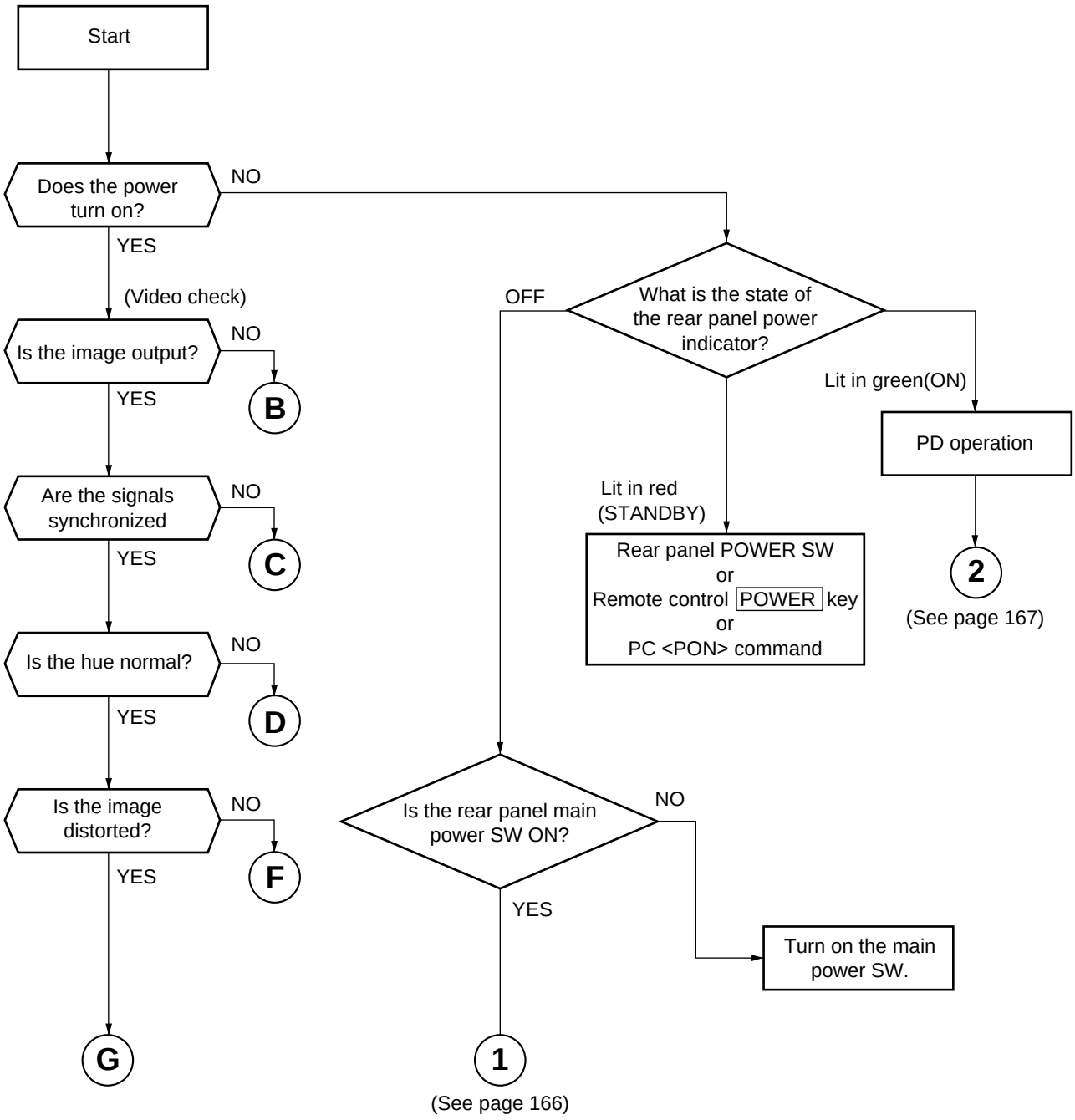
(The silicon tube is packed with CRT ASSY. For the silicon adhesive,be sure to use silicon adhesive part number GYL-017.)

■ **CAUTION** When connecting the anode cable, pay attention to the following.

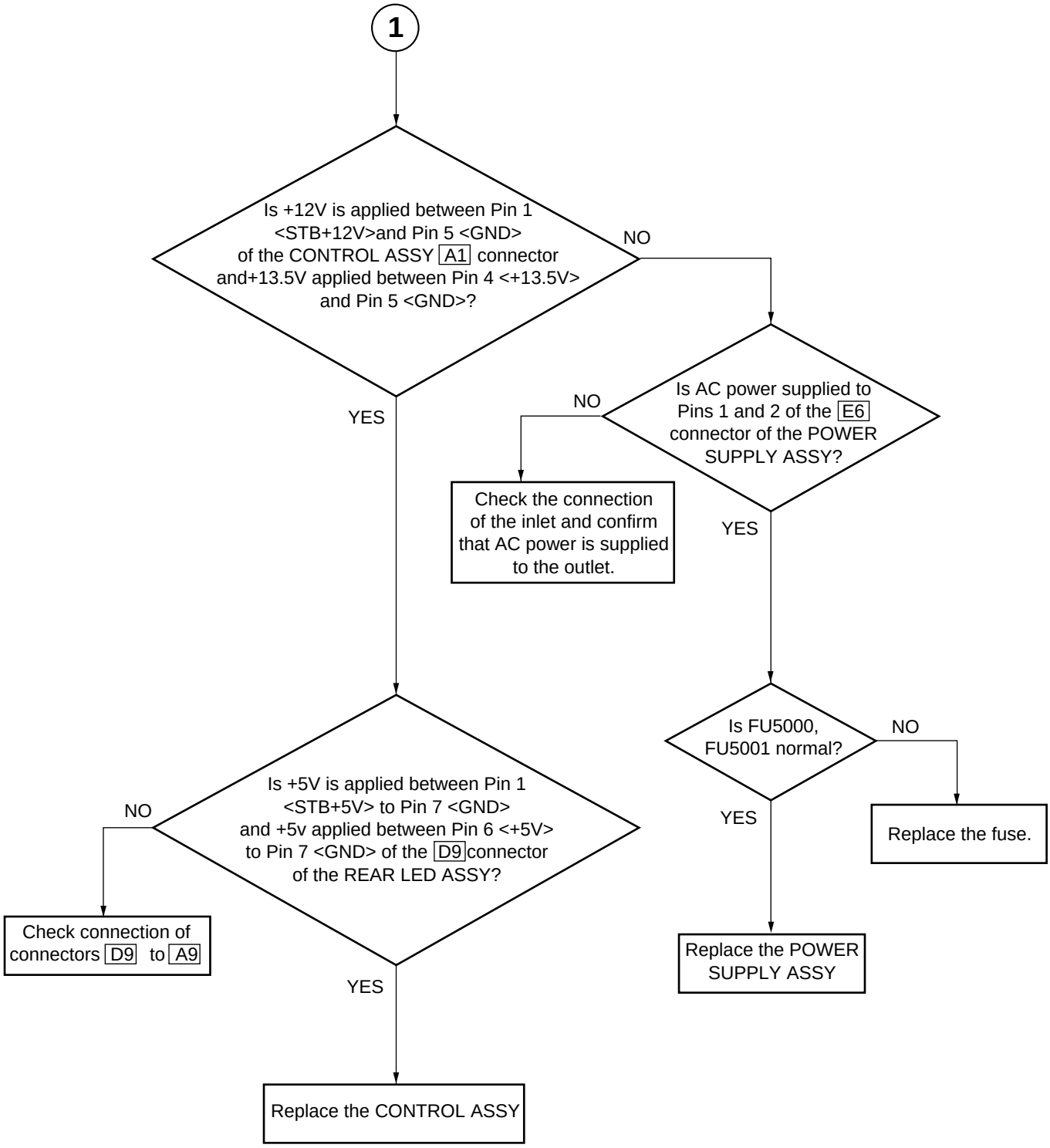
- Take care not damage the anode cable sheath.
- Insulate the cable core leads from other parts using the silicon adhesive and the silicon tube.
- Apply the silicon adhesive so that those are no air gaps.

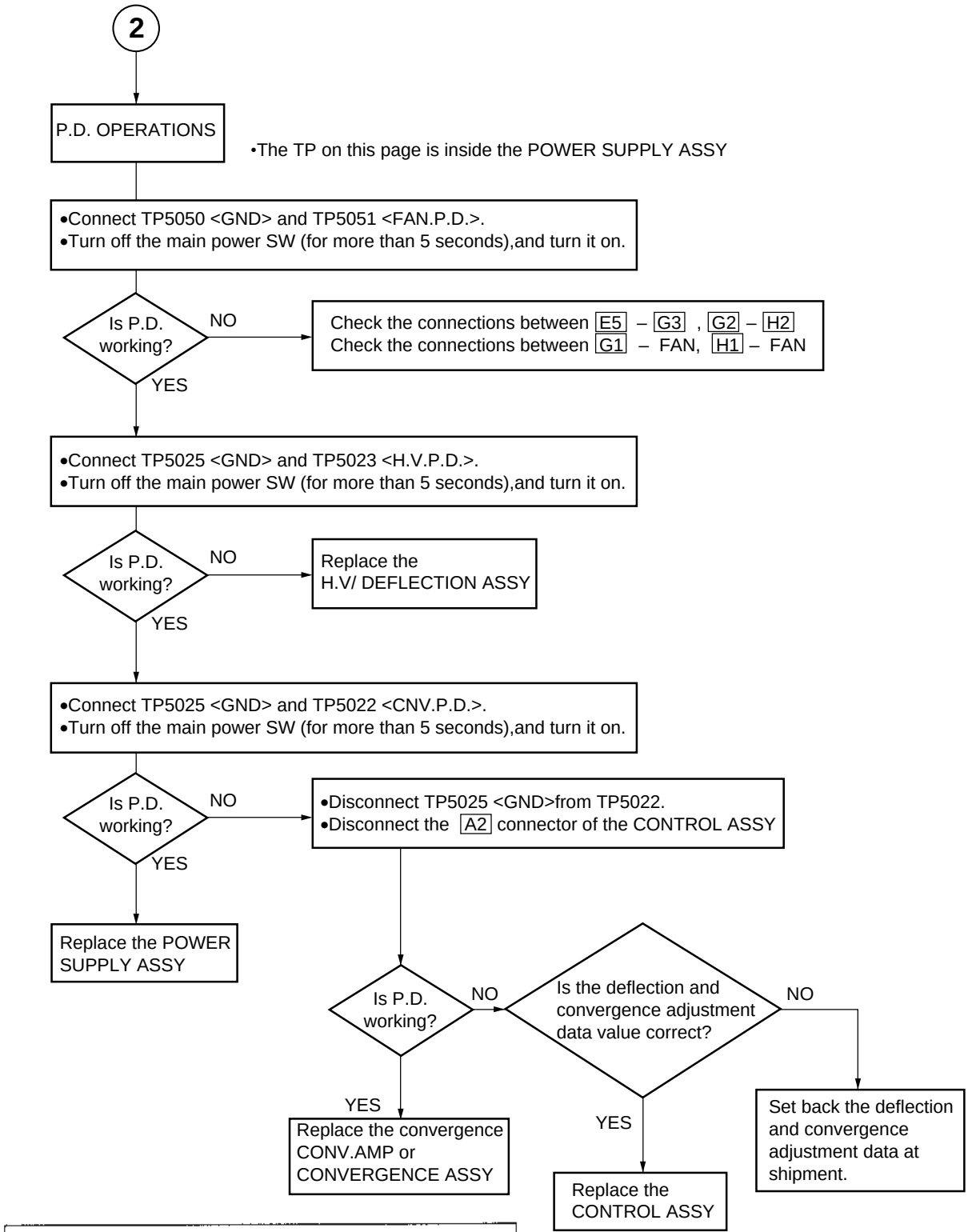


7.2.5 TROUBLESHOONTNG



Note: When performing video checks, always make sure the video signal is on the input terminal.

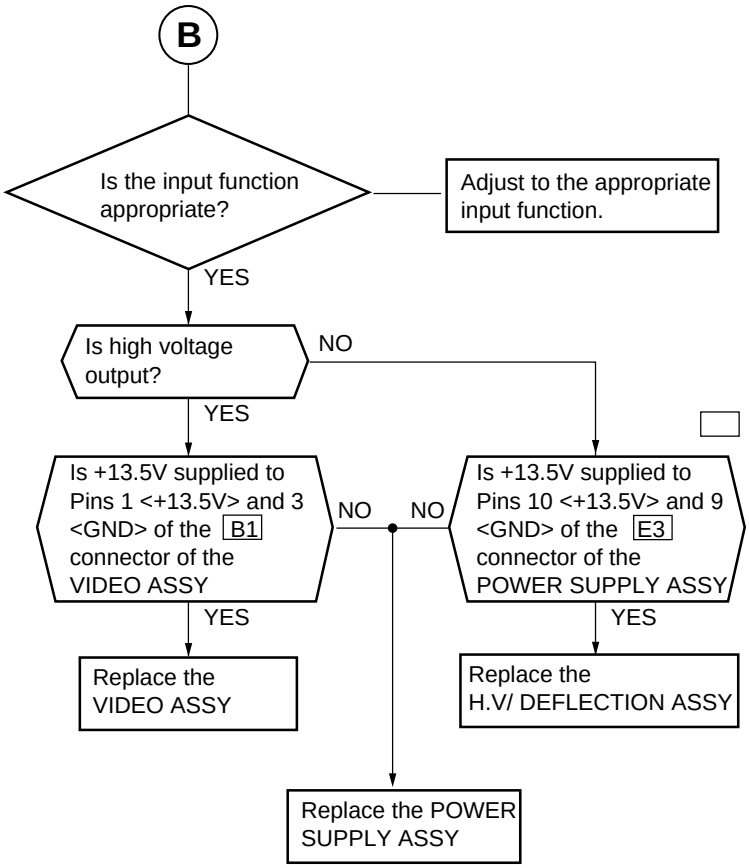

1
Is +12V is applied between Pin 1 <STB+12V>and Pin 5 <GND> of the CONTROL ASSY A1 connector and+13.5V applied between Pin 4 <+13.5V> and Pin 5 <GND>?
NO
YES
Is AC power supplied to Pins 1 and 2 of the E6 connector of the POWER SUPPLY ASSY?
NO
YES
Check the connection of the inlet and confirm that AC power is supplied to the outlet.
Is FU5000, FU5001 normal?
NO
YES
Replace the fuse.
Replace the POWER SUPPLY ASSY
Is +5V is applied between Pin 1 <STB+5V> to Pin 7 <GND> and +5v applied between Pin 6 <+5V> to Pin 7 <GND> of the D9 connector of the REAR LED ASSY?
NO
YES
Check connection of connectors D9 to A9
Replace the CONTROL ASSY

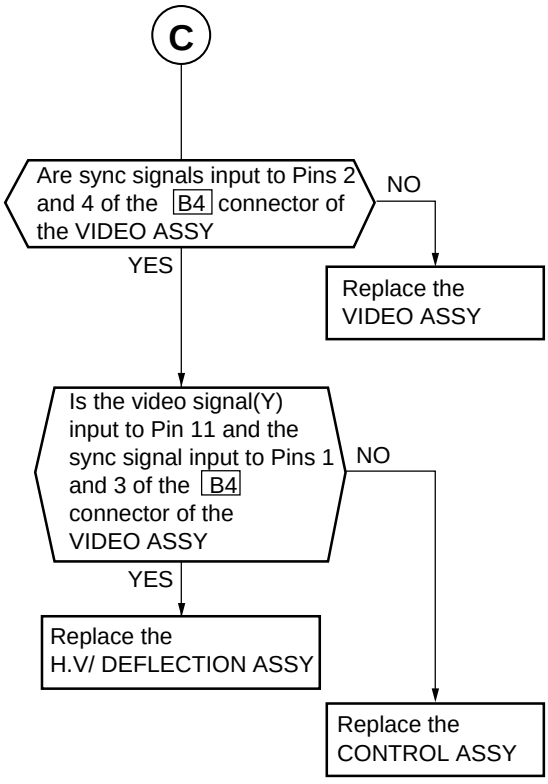

2
P.D. OPERATIONS
•The TP on this page is inside the POWER SUPPLY ASSY
•Connect TP5050 <GND> and TP5051 <FAN.P.D.>.
•Turn off the main power SW (for more than 5 seconds),and turn it on.
Is P.D. working?
NO
Check the connections between E5 – G3 , G2 – H2
Check the connections between G1 – FAN, H1 – FAN
YES
•Connect TP5025 <GND> and TP5023 <H.V.P.D.>.
•Turn off the main power SW (for more than 5 seconds),and turn it on.
Is P.D. working?
NO
Replace the H.V/ DEFLECTION ASSY
YES
•Connect TP5025 <GND> and TP5022 <CNV.P.D.>.
•Turn off the main power SW (for more than 5 seconds),and turn it on.
Is P.D. working?
NO
•Disconnect TP5025 <GND>from TP5022.
•Disconnect the A2 connector of the CONTROL ASSY
YES
Replace the POWER SUPPLY ASSY
Is P.D. working?
NO
Is the deflection and convergence adjustment data value correct?
NO
YES
Replace the convergence CONV.AMP or CONVERGENCE ASSY
YES
Replace the CONTROL ASSY
Set back the deflection and convergence adjustment data at shipment.

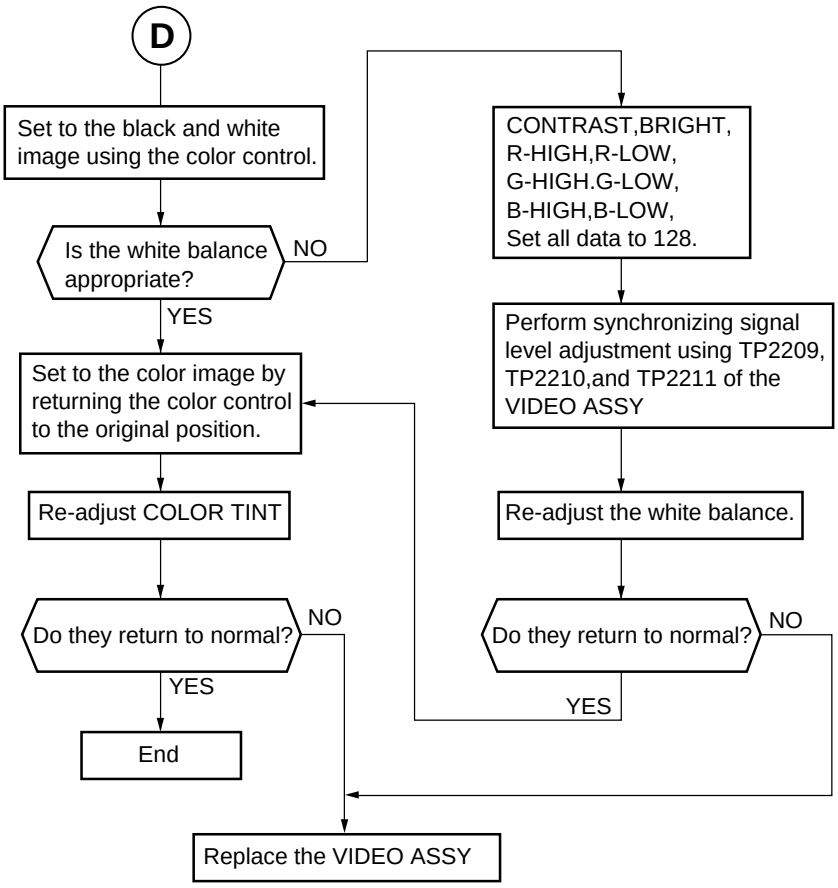
Precautions for Servicing

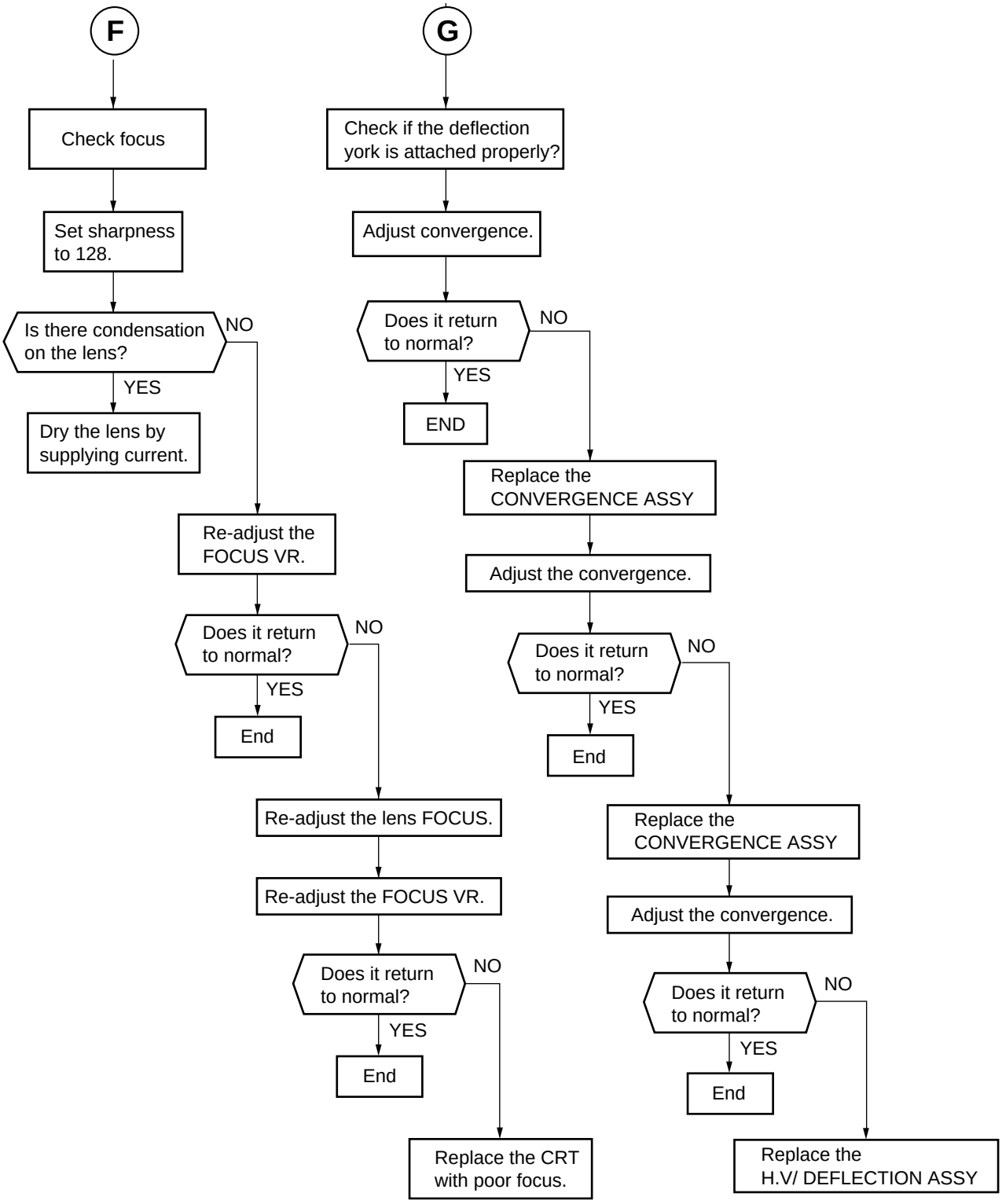
When performing operations with the relay connectors disconnected from the FAN (e.g.: E5 and H2, etc.) during servicing, connect TP5050 <GND> and TP5051 <FAN P.D.> in the power supply assembly. Otherwise, the FAN P.D. functions and no power is supplied to the unit.

Note : To prevent burning of the CRT, stop the operations of P. D. by disconnecting 4P <HT+> and 5P <HT–> of the high voltage and deflection assembly C2 connector.


B
Is the input function appropriate?
Adjust to the appropriate input function.
YES
Is high voltage output?
NO
YES
Is +13.5V supplied to Pins 1 <+13.5V> and 3 <GND> of the B1 connector of the VIDEO ASSY
NO
NO
Is +13.5V supplied to Pins 10 <+13.5V> and 9 <GND> of the E3 connector of the POWER SUPPLY ASSY
YES
YES
Replace the VIDEO ASSY
Replace the H.V/ DEFLECTION ASSY
Replace the POWER SUPPLY ASSY

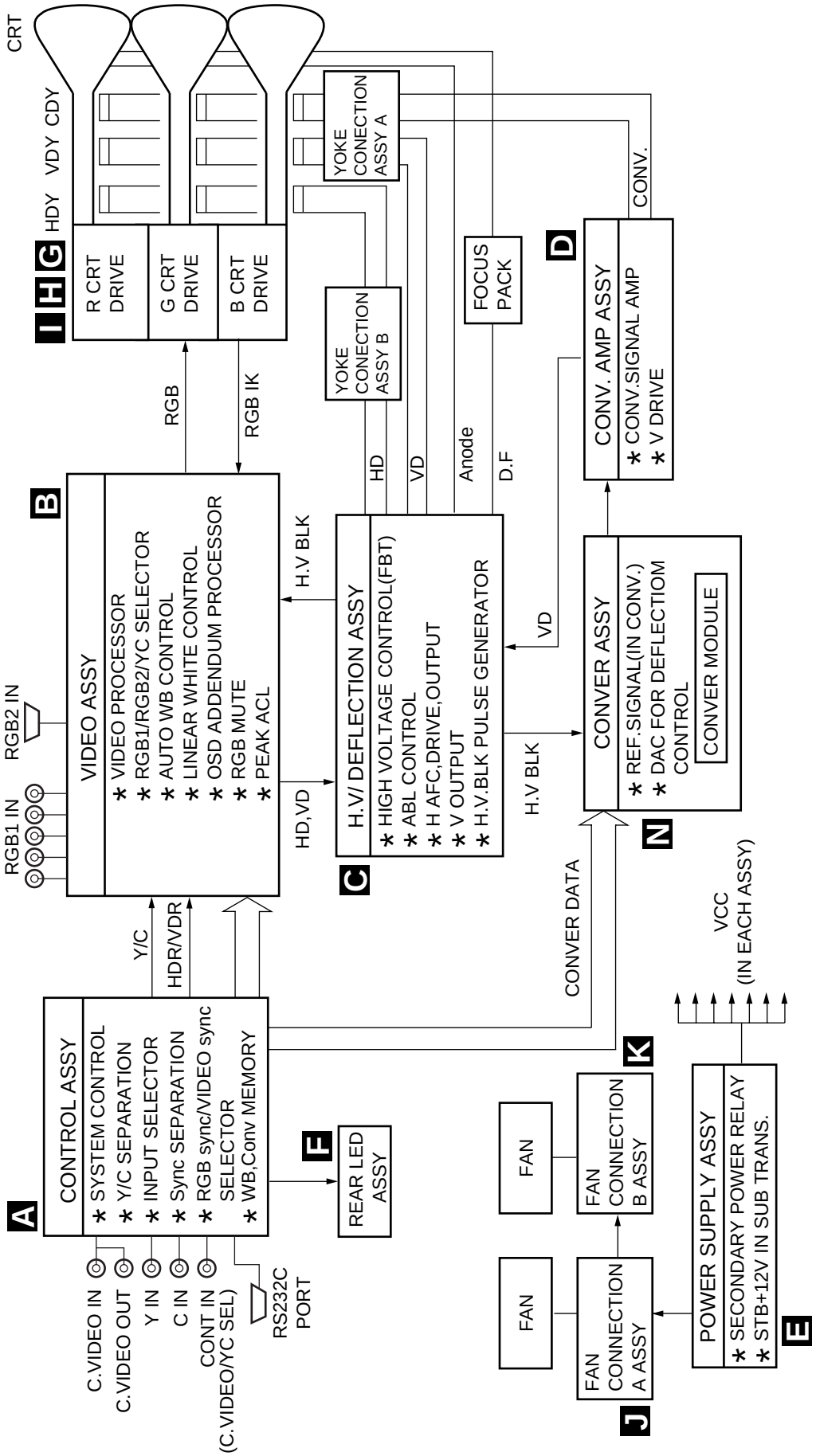

C
Are sync signals input to Pins 2 and 4 of the B4 connector of the VIDEO ASSY
NO
YES
Replace the VIDEO ASSY
Is the video signal(Y) input to Pin 11 and the sync signal input to Pins 1 and 3 of the B4 connector of the VIDEO ASSY
NO
YES
Replace the H.V/ DEFLECTION ASSY
Replace the CONTROL ASSY


D
Set to the black and white image using the color control.
Is the white balance appropriate?
NO
YES
Set to the color image by returning the color control to the original position.
Re-adjust COLOR TINT
Do they return to normal?
NO
YES
End
CONTRAST,BRIGHT, R-HIGH,R-LOW, G-HIGH.G-LOW, B-HIGH,B-LOW, Set all data to 128.
Perform synchronizing signal level adjustment using TP2209, TP2210,and TP2211 of the VIDEO ASSY
Re-adjust the white balance.
Do they return to normal?
NO
YES
Replace the VIDEO ASSY

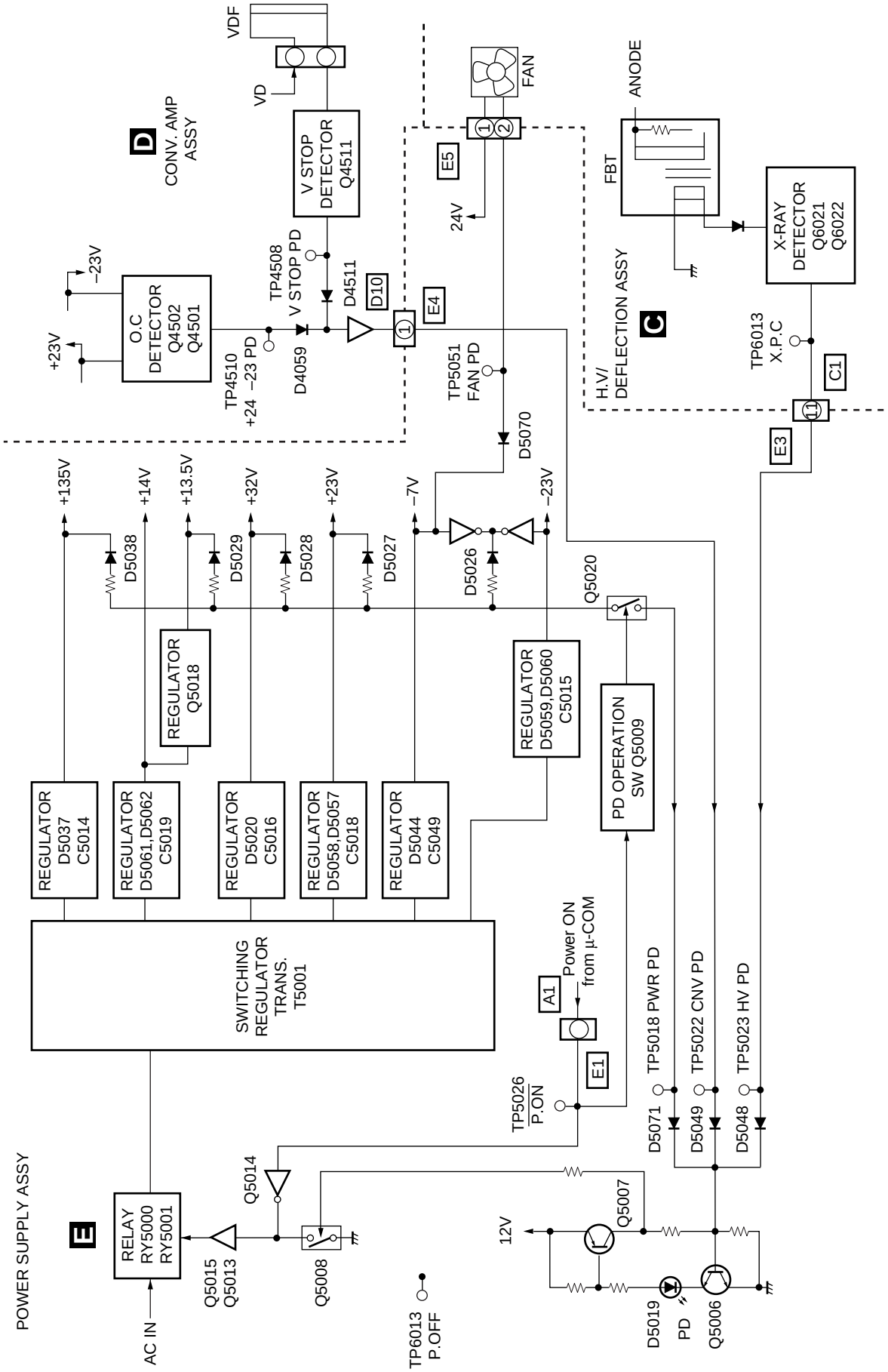

F
Check focus
Set sharpness to 128.
Is there condensation on the lens?
NO
YES
Dry the lens by supplying current.
Re-adjust the FOCUS VR.
Does it return to normal?
NO
YES
End
Re-adjust the lens FOCUS.
Re-adjust the FOCUS VR.
Does it return to normal?
NO
YES
End
Replace the CRT with poor focus.
G
Check if the deflection york is attached properly?
Adjust convergence.
Does it return to normal?
NO
YES
END
Replace the CONVERGENCE ASSY
Adjust the convergence.
Does it return to normal?
NO
YES
End
Replace the CONVERGENCE ASSY
Adjust the convergence.
Does it return to normal?
NO
YES
End
Replace the H.V/ DEFLECTION ASSY

7.3 BLOCK DIAGRAM

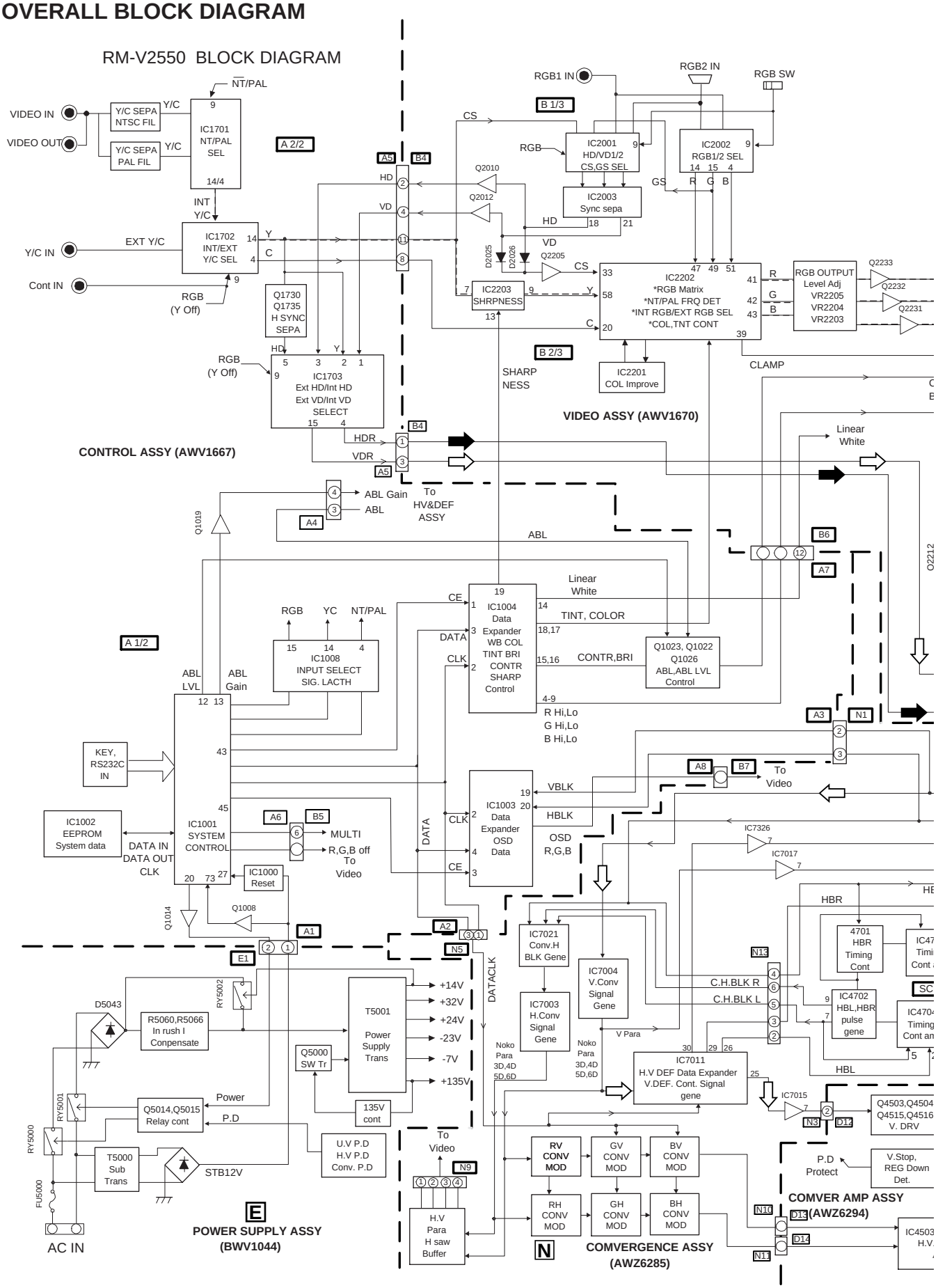
7.3.1 OUTLINE ON EACH PCB ASSY

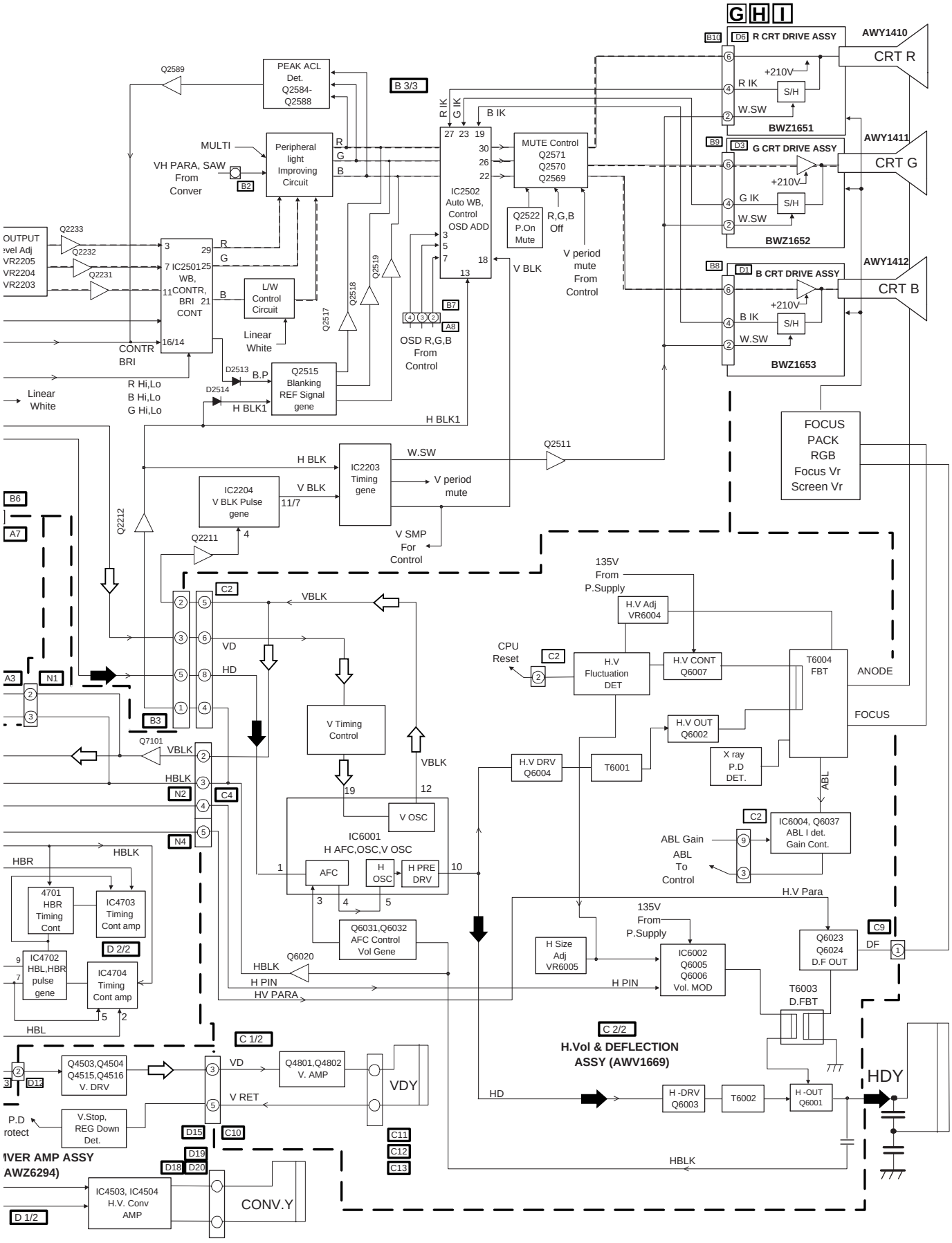


7.3.2 PD PROTECTION CIRCUIT



7.3.3 OVERALL BLOCK DIAGRAM




G H I
B10 D6 R CRT DRIVE ASSY
AWY1410
CRT R
+210V
R IK
S/H
W.SW
BWZ1651
B9 D3 G CRT DRIVE ASSY
AWY1411
CRT G
+210V
G IK
S/H
W.SW
BWZ1652
B8 D1 B CRT DRIVE ASSY
AWY1412
CRT B
+210V
B IK
S/H
W.SW
BWZ1653
FOCUS PACK
RGB
Focus Vr
Screen Vr
PEAK ACL Det. Q2584- Q2588
Q2589
B 3/3
MULTI
VH PARA, SAW From Conver
B2
Peripheral light Improving Circuit
R
G
B
R IK
G IK
B IK
IC2502 Auto WB, Control OSD ADD
MUTE Control Q2571 Q2570 Q2569
Q2522 P.On Mute
R,G,B Off
V period mute From Control
V BLK
Q2519
Q2518
Q2517
B7
A8
OSD R,G,B From Control
Q2233
Q2232
Q2231
IC2501 WB, CONTR, BRI CONT
L/W Control Circuit
Linear White
CONTR
BRI
R Hi,Lo
B Hi,Lo
G Hi,Lo
D2513
D2514
B.P
H BLK1
Q2515 Blanking REF Signal gene
Linear White
H BLK1
H BLK
IC2203 Timing gene
W.SW
Q2511
V period mute
IC2204 V BLK Pulse gene
V BLK
11/7
V SMP For Control
Q2212
Q2211
B6
A7
C2
VBLK
VD
HD
B3
Q7101
V Timing Control
VBLK
HBLK
N2
C4
N4
19
12
IC6001
H AFC,OSC,V OSC
V OSC
AFC
H OSC
H PRE DRV
1
10
3
4
5
Q6031,Q6032 AFC Control Vol Gene
Q6020
HBLK
H PIN
HV PARA
HBR
HBLK
4701 HBR Timing Cont
IC4703 Timing Cont amp
D 2/2
IC4702 HBL,HBR pulse gene
IC4704 Timing Cont amp
HBL
C 1/2
Q4503,Q4504 Q4515,Q4516 V. DRV
D12
VD
V RET
Q4801,Q4802 V. AMP
VDY
P.D rotect
V.Stop, REG Down Det.
D15
C10
C11
C12
C13
D19
D18
D20
IC4503, IC4504 H.V. Conv AMP
CONV.Y
D 1/2
IVER AMP ASSY
AWZ6294)
CPU Reset
H.V Fluctuation DET
H.V CONT Q6007
H.V Adj VR6004
135V From P.Supply
T6004 FBT
ANODE
FOCUS
H.V OUT Q6002
H.V DRV Q6004
T6001
X ray P.D DET.
ABL
IC6004, Q6037 ABL I det. Gain Cont.
ABL Gain
ABL To Control
H.V Para
135V From P.Supply
H Size Adj VR6005
IC6002 Q6005 Q6006 Vol. MOD
Q6023 Q6024 D.F OUT
C9
DF
T6003 D.FBT
C 2/2
H.Vol & DEFLECTION ASSY (AWV1669)
HDY
HD
H -DRV Q6003
T6002
H -OUT Q6001
HBLK

8. SPECIFICATIONS

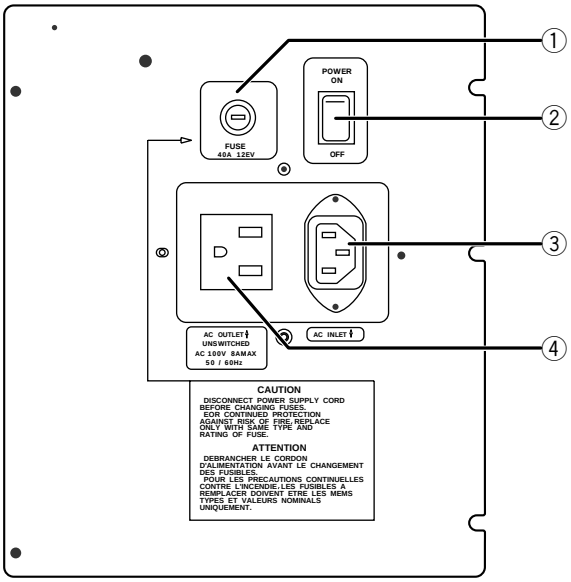
Multi Projection Unit (RM-V2550U)

Power supply voltage ..... AC100V to 120V, 50/60Hz
Normal electricity consumption ..... 360 VA *
Maximum electricity consumption 400VA
AC outlet (Max. 8A, AC100V to 120V) 1
Dimensions ..... 1030.8 (W)x1115.5 (H)x750 (D) mm
Weight ..... 87 kg
Accessories (This product is shipped in two packages.)
< Cabinet >
Operating instructions 1
Power cord 1
Control cable 1
Hex angular bolts with washer (M8 x 65) 2
Hex angular bolts with washer (M8 x 45) 2
Hex angular nuts (M8) 5
Slanting ray shields(black) 4
UL Safe Card 1
Registration Card 2
< Screen >
Metal hook bracket L 1
Metal hook bracket R 1
Screen frame metal fitting 1
Cross-recessed tapping tight screws
(tapping screws, dia 4, length 18) 2
(dia 4, length 8) ..... 18 (including 2 spares)
Cross-recessed tapping tight screws
(dia 4, length 12) 1
Cross-head small screw(M6 x 10) 1

* The NTSC color bar signal input and the data settings for each adjustment are preset before shipping from the factory.

9. PANEL FACILITIES AND SPECIFICATIONS

Parts and Functions



① Fuse Holder

The fuse holder should be only serviced by a certified technician.

② Main Power Switch

Turns the power on and off. When set to "on" the unit is in "last memory" (last memory is on when the power is on, and last memory is in stand-by when the power is off).

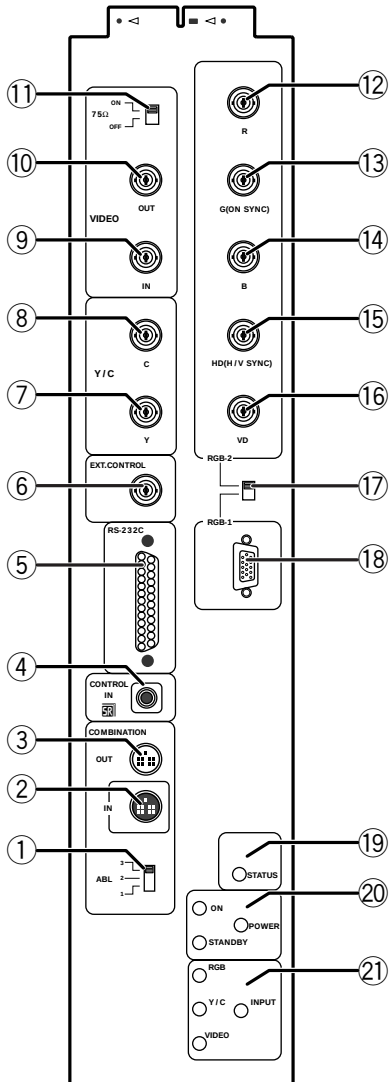
③ AC Inlet

Connects the power cord to the unit.

④ AC Outlet

Outlet for connecting another multi projection unit. Three units including the main one can be connected. The AC outlet is an unswitched outlet and therefore the main power switch does not affect this outlet.

Control Panel Sections



① ABL Link Switch

Changes the ABL link control voltage when the ABL link function is on.

② Link Input (DIN 6 pin)

Used to input ABL, signals for remote control, and RS-232C signals.

③ Link Output (DIN 6 pin)

Used to output ABL, signals for remote control, and RS-232C signals.

④ Remote Control Jack (Mini jack)

Connects a remote control for adjustments (sold separately).

⑤ RS-232C Port (D-sub 25 pin/female)

Port for transmitting RS-232C.

⑥ Control Input (BNC Connector)

Used to input video data and control signals that switch Y/C input.

Normal (when inputting video data) : OPEN
When switching Y/C input : LOW(0V)

⑦ Y (Luminance) Input (BNC Connector)

Used to input luminance signals.

⑧ C(color) Input (BNC Connector)

Used to input color signals.

⑨ Video Input (BNC Connector)

Used to input video data signals.

⑩ Video Output (BNC Connector)

THRU OUT for the (9) Video Input.

⑪ Termination Switch

This switch should be turned on when terminating the (9) Video Input at 75 ohm.

⑫ RGB Input • R (BNC Connector)

Used to input the R of RGB signals.

⑬ RGB Input•G/G On Sync (BNC Connector)

Used to input the G of RGB signals and composite sync signals (when the input signal is G On Sync).

⑭ RGB Input•B(BNC Connector)

Used to input the B of RGB signals.

⑮ RGB Input•Horizontal/Composite sync (BNC Connector)

Used to input the horizontal synchronization of RGB signals and composite sync signals (only when the synchronization signal is H/V sync).

⑯ RGB Input•Vertical Sync (BNC Connector)

Used to input the vertical synchronization of RGB signals.

⑰ RGB Input Change Switch

Used to switch the input of RGB signals.

⑱ RGB Input (D-sub 9 pin/ male)

Used to input RGB signals.

⑲ STATUS indication switch

Used to display on the screen the total running time and present settings for each switch.

⑳ POWER Switch

When “OFF”: STANDBY (red indicator) blinks.
When “ON”: ON (green indicator) blinks.

㉑ INPUT Change Switch

Used to switch between VIDEO, Y/C, RGB inputs.
* When set to the VIDEO position, it is possible to switch between VIDEO and Y/C inputs with the external control signals sent to (6).